

19970625.qrp qrp-por0.767

>From owner-qrp-l@Lehigh.EDU Tue Jun 24 18:03 CDT 1997
>Received: from sco.theporch.com (sco.theporch.com [207.234.31.38])
> by uro.theporch.com (8.8.6/A-UX-3.1.1) with ESMTP id SAA06659
> for <shimshon@uro.theporch.com>; Tue, 24 Jun 1997 18:03:48 -0500 (CDT)
>Received: from fidoii.CC.lehigh.EDU (fidoii.CC.lehigh.EDU [128.180.1.4])
> by sco.theporch.com (8.8.6/SCO-5.0.2) with ESMTP id XAA25249
> for <shimshon@theporch.com>; Tue, 24 Jun 1997 23:03:39 GMT
>Received: from Lehigh.EDU ([127.0.0.1]) by fidoii.cc.Lehigh.EDU with SMTP id
<34893-23392>; Tue, 24 Jun 1997 19:03:07 -0400
>Date: Tue, 24 Jun 1997 19:03:06 EDT
>Sender: owner-qrp-l@Lehigh.EDU
>Precedence: bulk
>From: qrp-l@Lehigh.EDU
>To: "Low Power Amateur Radio Discussion" <qrp-l@Lehigh.EDU>
>Subject: QRP-L digest 767
>Mime-Version: 1.0
>Content-Type: text/plain; charset=us-ascii
>X-Listprocessor-Version: 8.1 beta -- ListProcessor(tm) by CREN
>Message-Id: <97Jun24.190307edt.34893-23392+165@fidoii.cc.Lehigh.EDU>
>Status: 0

QRP-L Digest 767

Topics covered in this issue include:

- 1) [21832] Re: Watching an Expert Troubleshoot (Long)
by adams@chuck.dallas.sgi.com (Chuck Adams)
- 2) [21833] Re: MMA SLV tips
by mdwatt@usit.net (Marty Watt)
- 3) [21834] Directivity for G5RV on 40m
by Cecil A Moore <Cecil_A_Moore@ccm.ch.intel.com>
- 4) [21835] Dan's Announces 25% OFF Parts Sale
by Jerry Parker <jparker@fix.net>
- 5) [21836] Varactor VFO Drift (i.e. Centennial 75m)
by dwink@juno.com (Daniel C Winkler)
- 6) [21837] 50/40/30 schedule
by "Michael A. Gipe" <mgipe@reliablemeters.com>
- 7) [21838] Testing MOSFETS?
by Bill Meara <wmeara@erols.com>
- 8) [21839] Need manual for FT70GC
by "J. Skalski" <jskalski@acsu.buffalo.edu>
- 9) [21840] Desert strm solar panel
by "J. Skalski" <jskalski@acsu.buffalo.edu>
- 10) [21841] NOS NC40A
by wsmith@cyberdrive.net (Wayne A. Smith)
- 11) [21842] Backpacking trip
by herr@ridgecrest.ca.us (Michael Herr)

- 12) [21843] The Inverted-L Antenna
by wb2vuo@juno.com (William K Hibbert)
- 13) [21844] The Extended Double-Zepp
by wb2vuo@juno.com (William K Hibbert)
- 14) [21845] A Tilted Long-wire for HF (and maybe 6 Mtrs!)
by wb2vuo@juno.com (William K Hibbert)
- 15) [21846] Harmonically-related Dipoles for HF - 6 Mtrs
by wb2vuo@juno.com (William K Hibbert)
- 16) [21847] A Terminated Broad-Band Vee for 160 - 10 Mtrs
by wb2vuo@juno.com (William K Hibbert)
- 17) [21848] The Inverted-Wye, A 3-wire Ground Plane
by wb2vuo@juno.com (William K Hibbert)
- 18) [21849] HT-750 manual needed
by Niel Skousen <nskousen@scientech.com>
- 19) [21850] North Texas QRP Club (DFW Area) and FD
by na5k@juno.com (Smitty Smith)
- 20) [21851] Re: A Terminated Broad-Band Vee for 160 - 10 Mtrs
by Jim W7LS <w7ls@brigadoon.com>
- 21) [21852] QRP FD in N. TX?
by Steve & Laura Yates <aa5tb@swbell.net>
- 22) [21853] Wanted : PCB CAD Drawing Program
by John Horton <jhorton@primenet.com>
- 23) [21854] RE: 450-ohm ladder line dipole?
by George Gingell <k3tks@u1.abs.net>
- 24) [21855] Re: Your memory keyer
by adams@chuck.dallas.sgi.com (Chuck Adams)
- 25) [21856] Re: Aluminum Fence Wire Antennas?
by Steve Galchutt <N0TU@webaccess.net>
- 26) [21857] QRP FD station
by gmdiana@kodak.com (Gary Diana)
- 27) [21858] Special Event Station
by ab5uacw@juno.com (Clifton W Sikes)
- 28) [21859] Re: Fwd: Re: [TenTec] The new TT low end.....
by John Evans - N3Q00 <jae@codenet.net>
- 29) [21860] Re: Watching an Expert Troubleshoot (Long)
by "James C. Owen, III" <owen@piper.eeel.nist.gov>
- 30) [21861] Re: CW on 10m!
by N2QCE@aol.com
- 31) [21862] Wanted: Your dead 38S
by Brian Cieslak <brianc@ams-i.com>
- 32) [21863] RE: Double Delta Array, etc.
by rhiller@sysdev.com (Rick Hiller)
- 33) [21864] Rainbow tuner
by w7rfm@juno.com (John E Hirsch)
- 34) [21865] WTB:Corsair II
by "W. D. Lindsey" <70511.3041@CompuServe.COM>
- 35) [21866] QRP Forum?
by "Matt Wright, AE4JM" <cnw@hiwaay.net>

- 36) [21867] RFI: vanity call suggestions
by John Evans - N3Q00 <jae@codenet.net>
- 37) [21868] Re: SLV/MMA Elevated?
by "Bob Follett" <bfollett@ditell.com>
- 38) [21869] Re: Rainbow tuner
by jeverhar@camden.lmco.com
- 39) [21870] Re: SLV/MMA Elevated?
by Kory Hamzeh <kory@avatar.com>
- 40) [21871] Re: SLV/MMA Elevated?
by Monte Stark <ku7y@sage.dri.edu>
- 41) [21872] Re: SLV/MMA Elevated?
by Ed Loranger <we6w@qsl.net>
- 42) [21873] Standoffs
by Bob Liesenfeld <wb0poq@visi.com>
- 43) [21874] Re: Standoffs
by Ed Loranger <we6w@qsl.net>
- 44) [21875] Re: Standoffs for Brassboard construction
by Ed Tanton <n4xy@bellsouth.net>
- 45) [21876] Re: Wanted : PCB CAD Drawing Program
by randy_ott@juno.com (Charles R Ott)
- 46) [21877] Re: Aluminum Fence Wire Antennas?
by Jim W7LS <w7ls@brigadoon.com>
- 47) [21878] LE0s (long)
by tahrens1@juno.com (Tim H. Ahrens)
- 48) [21879] Re: Leo news
by "Rick Hadley" <r.hadley@www.mebbs.com>
- 49) [21880] New Solar Cycle Report/Status --Long, but exciting
by "Bob Follett" <bfollett@ditell.com>
- 50) [21881] Low Power SSB on 10M
by Bob Roach <KE4Q0K@worldnet.att.net>
- 51) [21882] RE: Standoffs
by "Ed Manuel" <n5em-qrp@msn.com>
- 52) [21883] Re: Standoffs for Brassboard construction
by Zack Lau <z1au@arrl.org>
- 53) [21884] Re: New Solar Cycle Report/Status --Long, but exciting
by Vic Rosenthal <rakefet@rakefet.com>
- 54) [21885] Front Panel Screws
by Zack Lau <z1au@arrl.org>
- 55) [21886] Re: East German Tank Keys
by "Steve Cohen" <scohen@xybion.com>
- 56) [21887] Re: Reserved QRP suffixes
by John Evans - N3Q00 <jae@codenet.net>
- 57) [21888] Yes, send email -- K3ETS
by Dennis Zeares K3ETS <wzeares@post.cis.smu.edu>
- 58) [21889] G5RV 40M Beam
by Cecil A Moore <Cecil_A_Moore@ccm.ch.intel.com>
- 59) [21890] Re: Reserved QRP suffixes
by John Evans - N3Q00 <jae@codenet.net>

60) [21891] NQ2RP/B Heard!
by wb2vuo@juno.com (William K Hibbert)
61) [21892] FS: Electro Voice Leg Key
by AE0Q V31RY <v31ry@ix.netcom.com>

Date: Tue, 24 Jun 1997 00:17:42 +0100
From: adams@chuck.dallas.sgi.com (Chuck Adams)
To: ki6ds@telis.org
Cc: qrp-1@lehigh.edu
Subject: [21832] Re: Watching an Expert Troubleshoot (Long)
Message-ID: <199706232317.AAA11893@chuck.dallas.sgi.com>

Doug,

Too late on the posting. I built the 40M and the 30M SST's without sockets. Hey, if I can build them with I can build them without.

My real reason for doing these two without the sockets was so that they could travel around and I don't have to worry about yanking the cover off and pushing them back end after each leg of a trip. :-)

Doug will mention to people in eyeball QSOs that one thing that I do and it will bother people to no end. I have been doing this since the Heathkit days.

I use a #11 Exacto Knife for a lot of stuff. BUT, this is a dangerous instrument in the hands of the untrained. DO NOT leave this puppy out where small kids and even large ones can get to it. Treat it like a surgical scapel. I use this knife to very very carefully scrape every lead on every part. I don't trust the flux to remove any oxide at all. Works for me. And if you scrape the coating off the magnetic wire on the toroids and tin them first you will eliminate 75% of your problems from the start.

Also, don't save a penny on the sockets. The ones I use and the only ones that I will use if I use them at all are the ones with the wide side contacts. I'll look up the part number in Mouser when I get home. They also allow the IC to sit low in the socket. Anything else, IMHO, will cause you grief. Don't be cheap when it comes to sockets. Some designers and kit manufacturers will jump up and down about sockets and problems with same but I have NEVER had any problems with these type sockets. Been there done that.

My many thanks to Doug for his visit and the joy that building the first SST 20M non-beta kit brought. It was fun and this was after an already long day at work and a late start and up almost all night to get it done in time for the talk at HamCom. It was worth every minute of lost sleep.

Also made the next go much faster. Practice does make perfect.

If anyone is intersted, I finally added a page with a lot of pictures of both the 20M and 40M versions. Not many comments yet, give me time to write up the pretty words and wait until I'm finished to ask me questions. I know that it frustrating to wait, but patience is the key. I have a job too.

OH, look at the teaser on the Morse Code Class online starting July 1.

dit dit es cul

Chuck Adams K5FO CP-60 adams@sgi.com

<http://reality.sgi.com/adams/>

WIMPS: Qs=039 30m=32 17m=5 12m=0 States=23/05/00 DX=03/00/00 QSLs=014

Date: Mon, 23 Jun 1997 23:34:54 GMT

From: mdwatt@usit.net (Marty Watt)

To: "Low Power Amateur Radio Discussion" <qrp-1@lehigh.edu>

Subject: [21833] Re: MMA SLV tips

Message-ID: <33b007c8.270837@smtp.usit.net>

MIME-Version: 1.0

Content-Type: text/plain; charset=us-ascii

Content-Transfer-Encoding: quoted-printable

On Mon, 23 Jun 1997 15:01:58 -0700, Ed Loranger <we6w@qsl.net>
wrote:

>Now if we can just find schedule 40 in a pattern to
>match the sink daisy....

>

>Just another attempt to get the xyl to accept my hobby...

Actually, it does kind of look like a bird feeder ...

72 es 73 de=20

Marty, KM7W

Jackson, Tennessee

e-mail: mdwatt@usit.net

<http://www.public.usit.net/mdwatt>

"The Curmudgeon's Corner"

NorCal #2031 - ARCI #7514 - QRP-L #953 - AK/QRP #098 - Grid EM55oq
~~~~~

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Date: Mon, 23 Jun 97 16:49:00 PDT  
From: Cecil A Moore <Cecil\_A\_Moore@ccm.ch.intel.com>  
To: qrp-1@lehigh.edu  
Subject: [21834] Directivity for G5RV on 40m

A friend of mine is going on sabbatical in the NW USA and wants to keep in touch on 40m CW at night. Unfortunately, my G5RV length dipole (102ft) fed with 450 ohm ladder-line, is oriented N10W to align the lobes for DX on 20m and 17m.

Knowing that a Windom has directivity toward the long end, I tried modeling a 27ft vertical wire hanging from one end of the G5RV. It does give a nice directional pattern off the end where the vertical section is attached. Gain is about 5.5dBi with a horizontal beamwidth of 140 degrees, just what I needed. It's a super easy way to turn a G5RV length dipole into a "beam" 90 degrees away from the normal broadside pattern on 40m. It's a 2 minute setup time for me.

73, Cecil, W6RCA, 00TC

-----  
Date: Mon, 23 Jun 1997 17:44:55 -0700  
From: Jerry Parker <jparker@fix.net>  
To: qrp-1@Lehigh.EDU  
Subject: [21835] Dan's Announces 25% OFF Parts Sale  
Message-ID: <2.2.32.19970624004455.00b457b0@fix.net>  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"

Yes it is true!

Dan's has announced that beginning July 1st you can purchase from his Internet Catalog.

Take a look at Dan's already low prices then take an additional 25% off on Parts and 10% on Kits!

<http://www.fix.net/dans.html>

Enjoy,,,72,,,Jerry...K

ps...Oh yes, Sale Ends August 31st.

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Date: Mon, 23 Jun 1997 20:46:10 EDT  
From: dwink@juno.com (Daniel C Winkler)  
To: FAITHD@dnr.state.wi.us, qrp-1@Lehigh.EDU  
Subject: [21836] Varactor VFO Drift (i.e. Centennial 75m)  
Message-ID: <19970623.174825.4959.10.DWink@juno.com>

Hi gang,

On Fri, 20 Jun 1997 Don C. Faith wrote:

>... mods... to reduce the amount of drift from the Varactor VFO ...?

Doug DeMaw addressed this problem a long time ago. He wrote an article in QST (Sept 87, p25), which is reprinted in QRP Classics (p111). He used a temperature-compensating diode to reduce the varactor drift.

The 7 MHz VFO is tuned with an MV2109 varactor. The varactor is RF isolated from the tuning circuit by a 500 uH choke. Tuning voltage (1.6 to 7.5 volts - from a 10k pot with appropriate resistors at each end) goes through the base---> emitter junction (diode) of a 2N3904 NPN transistor (collector left floating). The emitter is tied to the "cold" end of the 500 uH choke, and to a 270k resistor going to ground, allowing some current to flow through the BE junction. This diode, the 2N3904 BE junction, acts as the temperature compensation diode.

Doug wrote:

"As the ambient temperature changes, so does the resistance of the... diode. The small resultant resistance change causes the reverse voltage at D1 to change slightly, thus compensating for changes in the (varactor) diode capacitance that are caused by heat."

The oscillator is a Colpitts type, using a 2N2222A. He used 680pf polystyrene caps from base to emitter and emitter to ground, and NP0 caps (100pf) for the tank and coupling caps. The inductor was a 2.6 uH slug tuned inductor (#6 material for its temperature characteristics, Amidon L-57-6 transformer assembly).

"I measured the drift at room temperature (72 F) with the cover in place. The initial drift took place in a 30 second spurt. Thereafter the drift was gradual, and stabilization (+/- 2 Hz) was noted after 10 minutes. The long term drift was measured as 80 Hz. Do not measure your VFO drift for at least an hour after all soldering on the PC board is completed. The VFO module should be mounted in place and enclosed in a cabinet before measurements commence. Even slight stress on the VFO board will cause frequency changes."

I guess the circuit never caught on, for I never saw anyone else use it in a published article.

Please do not ask for a copy of the article. I just don't have time to do that.

73, Dan Winkler N7IVR Seattle, WA DWink@Juno.com

-----  
Date: Mon, 23 Jun 1997 18:49:21 -0700  
From: "Michael A. Gipe" <mgipe@reliablemeters.com>  
To: "QRP-L list server" <qrp-l@lehigh.edu>  
Subject: [21837] 50/40/30 schedule  
Message-ID: <199706240149.UAA03675@multi13.netcomi.com>  
MIME-Version: 1.0  
Content-Type: text/plain; charset=ISO-8859-1  
Content-Transfer-Encoding: 7bit

Here's the latest update to the 50/40/30 schedule.

Is your state represented? If not, contact mgipe@reliablemeters.com

Mike K1MG



50/40/30 schedule:

UTC        Band

0000-0200 30

0200-0400 40

| Date (LOCAL) | State | Call Name                            |
|--------------|-------|--------------------------------------|
| 18 March     | IN    | WD4MSM/N9DD BARRY/TOM                |
| 20 March     | AZ    | KI7MN/NQ7K/N7VE BOB/MIKE/DAN/JOE     |
| 25 March     | RI    | K8ZFJ RANDY 40 M ONLY                |
| 27 March     | DE    | K3QIO JIM                            |
| 1 April      | CO    | (op:AA0XI)/W0CQC/N3Q00 MARSHALL/JOHN |
| 3 April      | NY    | N2VPK/WZ2T/KB2YWT MARK/RICK/DAVE     |
| 5 April      | AK    | AL7FS JIM                            |
| 8 April      | AR    | K5ID/W0LK/W7KXB KEN/BOB/BILL         |
| 10 April     | TN    | WS4S/KM7W CONARD/MARTY               |
| 12-13 April  | ND    | N0UR JIM                             |
| 15 April     | OK    | AB5UA CLIF                           |
| 17 April     | MT    | N7GS MAL                             |
| 22 April     | IA    | KQ0I MARK                            |
| 24 April     | IA    | KD0CA JERRY                          |
| 29 April     | OH    | K8IDN STEVE                          |
| 1 May        | MA    | WA1QVM JOEL                          |
| 6 May        | MN    | K0EVZ DOC                            |
| 8 May        | OR    | N7CQR DAN                            |
| 13 May       | AL    | KS4L RANDY                           |
| 15 May       | NJ    | KA2PQY MIKE                          |
| 20 May       | TX    | NR3E/KJ5VW DAVE/GARY                 |
| 22 May       | MS    | K5XU MIKE                            |
| 27 May       | VA    | N4ROA DAN                            |
| 29 May       |       |                                      |
| 3 June       | MO    | KR0I MAC                             |
| 5 June       |       |                                      |
| 10 June      | CT    | AA1MY/N1ST SEAB/SCOTT                |
| 12 June      | SC    | N4NK LES                             |
| 17 June      | GA    | K4JPN STEVE                          |
| 19 June      | CA    | WE6W ED                              |
| 24 June      | ID    | AB7TK RANDY                          |
| 26 June      | NE    | WB0QQT STEVE                         |
| 1 July       | MI    | WA8LCZ/K8CV BYRON/WALT               |
| 3 July       | WA    | WA20CG MICHAEL                       |
| 8 July       | WI    | AE9K BRIAN                           |
| 10 July      |       |                                      |
| 15 July      | WV    | W9XN/8 MARTIN                        |
| 17 July      | PA    | NR3Z MARTIN                          |
| 22 July      | MD    | N3REY JOHN                           |

24 July NC KF4AR RICK  
29 July KY KA80KH/NU4N RICH/DAVE  
31 July MS K5XU MIKE  
5 August  
7 August  
12 August  
14 August  
19 August LA K5RV BRIAN  
21 August  
26 August KS N5CLU STEVE  
28 August MN K0EVZ DOC  
2 Sept  
4 Sept

-----  
Date: Mon, 23 Jun 1997 21:58:51 -0400  
From: Bill Meara <wmeara@erols.com>  
To: qrp-1@Lehigh.EDU  
Subject: [21838] Testing MOSFETS?  
Message-ID: <199706240200.WAA09170@smtp3.erols.com>  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"

QRPers:

Tom Sefranek was kind enough to send me some MOSFETS for use in my Bare Bones Superhet project. I've been working on Boatanchors so long that I've forgotten how to test MOSFETS. Tom mentioned that he wasn't sure if all the devices he sent were good. Is there any way of testing these things without destroying them in the process?

TIA

73 de N2CQR  
Bill Meara  
QTH: Falls Church, Virginia, USA  
Formerly of Tegucigalpa, Bilbao and Santo Domingo  
wmeara@erols.com  
<http://www.mindspring.com/~johnmb/billm.htm>

Date: Mon, 23 Jun 1997 22:30:11 -0400 (EDT)  
From: "J. Skalski" <jskalski@acsu.buffalo.edu>  
To: qrp-l@lehigh.edu  
Subject: [21839] Need manual for FT70GC  
Message-ID: <Pine.GS0.3.96.970623222758.17516B-100000@xena.acsu.buffalo.edu>  
MIME-Version: 1.0  
Content-Type: TEXT/PLAIN; charset=US-ASCII

Does anyone have this manual. I need a copy of the English version :-)

The weather in the Buffalo area is just beautiful.....

73,

Jim N2GO  
The Buffalo QRP CONNECTION  
ARCI #9013 QRP-L #381  
Life member ARRL  
jskalski@acsu.Buffalo.EDU

-----  
Date: Mon, 23 Jun 1997 22:32:48 -0400 (EDT)  
From: "J. Skalski" <jskalski@acsu.buffalo.edu>  
To: qrp-l@Lehigh.EDU  
Subject: [21840] Desert strm solar panel  
Message-ID: <Pine.GS0.3.96.970623223128.17516C-100000@xena.acsu.buffalo.edu>  
MIME-Version: 1.0  
Content-Type: TEXT/PLAIN; charset=US-ASCII

Did anyone get a solar panel that was used in desert storm?  
These were offered by Antennas West....

73,

Jim N2GO  
The Buffalo QRP CONNECTION  
ARCI #9013 QRP-L #381  
Life member ARRL  
jskalski@acsu.Buffalo.EDU

-----  
Date: Mon, 23 Jun 1997 22:50:35 -0400  
From: wsmith@cyberdrive.net (Wayne A. Smith)  
To: qrp-1@Lehigh.EDU  
Subject: [21841] NOS NC40A  
Message-ID: <199706240250.WAA27390@nemesis.cybergate.net>  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"

Last month at Dayton, I found an unbuilt Norcal NC40a kit. I recently built it and am having a receive problem that I can't isolate. TX work great with about 2.5 watts out and keying sounds good. Rx can only hear 40 over nine signals and cannot even hear the sidetone. I also am experiencing an oscillation when the audio gain is advanced too high. All voltages seem in order and tune up went well except for the low sensitivity. Tried changing NE602's and dis-abling the AGC circuit but no luck. Any suggestions??

Thanks, Wayne K8FF

-----  
Date: Mon, 23 Jun 1997 19:58:41 -0800  
From: herr@ridgecrest.ca.us (Michael Herr)  
To: qrp-1@lehigh.edu  
Subject: [21842] Backpacking trip  
Message-ID: <v01530500afd4f53c3518@[199.120.150.123]>  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"

Hello gang,

Another great backpacking trip has come and gone. We, BSA Troop 3 out of Ridgecrest, CA, Hiked down along the Pacific Crest Trail to Rockhouse Basin, located in the Domeland Wilderness. Brought along the trusty, rusty Norcal 40 and dipole. Worked great! Just casual chatting, including working another camper across the state also using a NorCal 40 and a PA station late at night.

If you have never tried camping and qrping, your really missing something. My coworkers have decided that I shouldn't go out backpacking anymore, seems like I have an "attitude" when I get back!

vy 72

Mike WA6ARA

-----  
Date: Mon, 23 Jun 1997 23:03:58 EDT  
From: wb2vuo@juno.com (William K Hibbert)  
To: qrp-1@Lehigh.EDU  
Subject: [21843] The Inverted-L Antenna  
Message-ID: <19970623.230303.2063.0.wb2vuo@juno.com>

Here's the Inverted-L info from BARK...72/73, Keith, WB2VUO

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Page 1

### The Inverted "L" Antenna

So, you REALLY want to get on the 160 Meter band, but the neighbors won't let you run your 250' long dipole over their swimming pool? And, you say that the State DOT looks down on your attempt to tie the other end across the State Highway? Well, fear not, as there is a compact solution to your MF antler woes, and it is an Inverted "L". [It can also be cut for 80 or 40].

The Inverted "L" is a 1/4-wave Marconi, fed against ground or a counterpoise such as radials. The antenna displays a low feed impedance, which allow you to feed it directly with 50-ohm coax cable. The vertical section should be as high as possible, with the remainder of the antenna run horizontally to a support, such as a tree or a mast. The antenna is fabricated from wire, with the heavier the gauge the better. [The larger the wire diameter, the wider the bandwidth]. One method of installation would be to use a mast as the vertical "wire", with the horizontal section firmly bonded to the top of the mast.

The wire is cut to a resonant 1/4-wave length, based on the formula:

$$L(\text{Ft}) = 234/F(\text{MHz})$$

If your ground is REALLY good, like your house is on stilts over the ocean, a counterpoise won't be needed, but for our GREAT ground here in Western NY, figure on using at least one counterpoise, if not a few. The length of the counterpoise wires will be cut to a 1/4-wavelength by the formula:

$$L(\text{Ft}) = 246/F(\text{MHz})$$

Basically, the counterpoise should be high enough to not get in the way, but could be as high as your installation allows. Mine is run around the base of the house, just below the siding, except around the back door. At that point, I ran the wire under the bottom of doorframe. The wire I used is #18 stranded insulated hook-up wire.

#### CHARTS

Well, any antenna discussion is not complete without a chart of some sort, so here are the dimensions for an Inverted "L", listed in tabular form:

| Frequency | Radiator Length | Counterpoise Length |
|-----------|-----------------|---------------------|
| 1.85 MHz  | 126.5'          | 133.0'              |
| 1.95 MHz  | 120.0'          | 126.2'              |
| 3.60 MHz  | 65.0'           | 68.3'               |
| 3.90 MHz  | 60.0'           | 63.1'               |
| 7.15 MHz  | 32.7'           | 34.4'               |

For bands above 40 Meters, an All-Wire Ground Plane can be constructed, but that's another wire antenna project for the future. Give the Inverted "L" a try, and enjoy your limited-space MF/HF operation.

73, Keith, WB2VUO

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Date: Mon, 23 Jun 1997 23:04:00 EDT  
From: wb2vuo@juno.com (William K Hibbert)  
To: qrp-1@Lehigh.EDU  
Subject: [21844] The Extended Double-Zepp  
Message-ID: <19970623.230303.2063.5.wb2vuo@juno.com>

It's L-O-N-G, but it plays! 72/73, Keith, WB2VUO  
-----

(Psst...Wanna double your power, for Free?)

Well, not for free, but almost so. Let's look at how one can

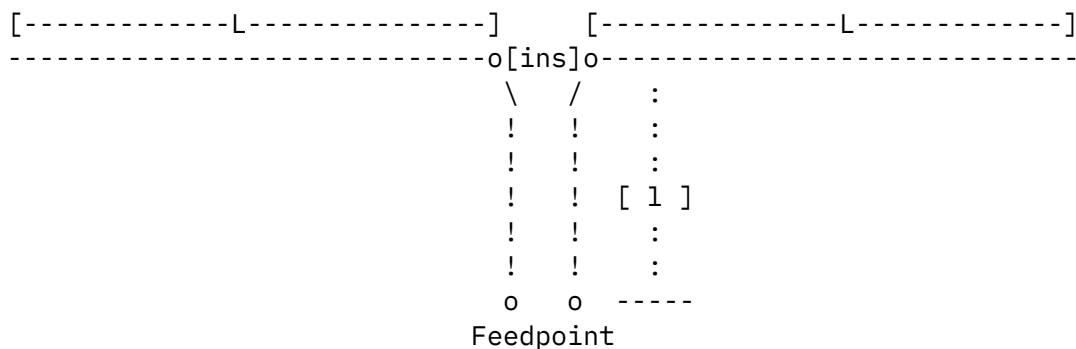
"double" one's power. How, first of all, are we looking at your "power". One way is to look at the output of your rig. If you increased your output from 5 watts to 10 watts, there could be no argument that you had doubled your power. But, if your antenna had a gain of 2 [3dB], at the other end of your contact, it would LOOK like you had increased your power.

Now, about the "FREE" part of this discussion. The simplest, and least expensive antennas are wire antennas. To double your Effective Radiated Power [ERP], you need a gain of 3dB over your former antenna. Using a dipole as the reference, this would be expressed as 3 dBd, or 3 dB over a dipole. So, what "FREE" wire antenna will give us 3dBd?

One of the easiest, and cheapest is the Extended Double-Zepp, or EDZ. What it is, is two elements, fed in a collinear fashion, with each element extended from 1/4-wave long to 5/8-wave long. Many of the Antenna Books show this antenna fed via a 0.11-wavelength stub, which results in a 150-ohm feedpoint impedance. Nice, but when was the last time you saw 150-ohm feedline? So, you say, 'How do I feed my EDZ?' If you feed it directly with ladder line, either 300-ohm, or 450-ohm, the SWR on the line will be 2:1 or 3:1. With the inherent low loss of the ladder lines, this will never be noticed. The ATU you are using will tune out this mismatch, and make the transmitter happy. If you really insist on a 'flat' line for the antenna, then a 1/4-wave shorted line should be attached to the feedpoint, and your feedline should be tapped down to the correct spot on the line to match it. Using this method, you could even feed the EDZ with 50-ohm line. This would make the antenna a single-band antler, whereas the resonant feed with the ladder line will allow you to run the antler on multiple bands.

The formulas used to calculate the lengths in an Extended Double Zepp are as follows:

Leg length (feet):  $L = 600/F(\text{MHz})$   
 Stub length (feet):  $l = 108/F(\text{MHz})$



\*\*\*NOTE: [ins] is the center insulator for the wire.....

If you want your EDZ to be the single band version, and not use an ATU, then the stub length, [ l ], should be equal to  $246/F(\text{MHz})$ , and the bottom of the stub should be connected together, with the feedline tapped up to the correct matching point. This point would need to be determined empirically, also known as "cut-and-try".

#### HOW BIG IS IT???

This is a good question, and might be the disqualifying factor for some. Here is a listing, in tabular form with dimensions. I am listing it for the bands from 160 meters up, but I don't have the room for the lower bands, myself. [Wish I did, though].

| FREQ (MHz) | L (Ft) | l (Ft) | Flattop Length (Ft) |
|------------|--------|--------|---------------------|
| 1.85 MHz   | 324.3' | 58.4'  | 648.6'              |
| 1.95 MHz   | 315.8' | 56.8'  | 631.6'              |
| 3.60 MHz   | 166.7' | 30.0'  | 333.3'*             |
| 3.90 MHz   | 153.8' | 27.7'  | 307.7'              |
| 7.15 MHz   | 83.9'  | 15.1'  | 167.8'*             |
| 10.10 MHz  | 59.4'  | 10.7'  | 118.8'              |
| 14.20 MHz  | 42.3'  | 7.6'   | 84.5'               |
| 18.10 MHz  | 33.1'  | 6.0'   | 66.3'               |
| 21.20 MHz  | 28.3'  | 5.1'   | 56.6'*              |
| 24.90 MHz  | 24.1'  | 4.3'   | 48.2'               |
| 28.40 MHz  | 21.1'  | 3.8'   | 42.2'*              |
| 29.50 MHz  | 20.3'  | 3.7'   | 40.7'               |
| 50.20 MHz  | 12.0'  | 2.1'   | 23.9'               |
| 52.50 MHz  | 11.4'  | 2.1'   | 22.9'               |

\* - Very Good Novice Antenna(s), also

As you can see from the chart, many of the dimensions for an EDZ are the same as a dipole for other bands. This helps explain why a center-fed antenna, fed with ladder line, will work so well on multiple bands. It is a 1/2-wave on one band, 1-wave on others, and EDZ on yet others. Another principle that allows one to "get away" with the ladder line feed system is the good old "Gootches' Principle", which states that "RF Gotta go SOMEWHERE!"

So, if you have the real estate, the time and the inclination, try out an EDZ in your Antenna Farm, or for Field Day, and see what sprouts up in the bands, and in your log...



Trustee, KB2YTW/B 10 Mtr Milliwatting Beacon (250 Mw @ 28.2870 MHz)  
"In the Depths of the Great Bergen Swamp...FN13ac"

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Date: Mon, 23 Jun 1997 23:03:59 EDT  
From: wb2vuo@juno.com (William K Hibbert)  
To: qrp-1@Lehigh.EDU  
Subject: [21845] A Tilted Long-wire for HF (and maybe 6 Mtrs!)  
Message-ID: <19970623.230303.2063.2.wb2vuo@juno.com>

This is my 20 Meter antler here...72/73, Keith, WB2VU0

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#### A Tilted Off-Center Fed Long-Wire

In the December, 1995 "QST", there is an article on a tilted (sloped) long-wire array called "The Super Sloper", by Roger Sparks, W7WKB. What Roger had done was to model a tilted long-wire with a parasitic director with his computer. What he found can be applied to a simpler array utilizing just the long wire with an offset feedpoint.

A basic long-wire will have a pattern that differs from the classical 1/2-wave antenna. The radiation will be more off the ends of the wire instead of the sides, with the major lobes lining up closer to the wire direction as the length is increased. The major lobes form a squashed cloverleaf pattern, with the center of the pattern partially filled with the minor lobes. (By definition, a minor lobe is any lobe that is -10dB when compared to the strongest major lobe...) These lobes run from 45-degrees off-axis for a 1-wave long-wire, to 25-degrees off-axis for an 8-wave long-wire. Most amateurs don't have room for anything greater than 8 wavelengths long, even on 10 Meters, so we won't discuss them here.

One thing that is overlooked is that these major lobes also display a radiation angle, (vertical angle), equal to the offset angle. By tilting the wire, the major lobes can be depressed to the horizon, which will make the antenna more unidirectional. A good compromise angle is 30-degrees, although even a 15 - 20 degree angle will produce a front-to-back ratio. This angle can be achieved with a 40-foot high support at one end, and a 10-foot high support at the other, with overall lengths of 70 - 150 feet.

The offset feed point is used to enhance the unidirection characteristics and to feed the antler at a current node, which brings

the feedpoint impedance down to a more manageable level. Basically, the feedpoint is 1/4-wave from the high end of the wire, with the total length

of the wire being equal to an integral multiple of 1/2-wave, (1-wave, 1 1/2-wave, 2-wave, etc...) For the example, I will model this antler for 20 Meters, with a 1-wave version, and a 1 1/2-wave version:

#### 1-Wave Tilted Wire

Frequency = 14.200 MHz  
Total Length = 67.5 feet  
Feedpoint = 16.5 feet  
Approx. Gain = 2.5 dB

#### 1 1/2-Wave Tilted Wire

Frequency = 14.200 MHz  
Total Length = 101.5 feet  
Feedpoint = 16.5 feet  
Approx. Gain = 3.0 dB

The length of the 1 1/2-wave Tilted Wire may look familiar, and it should. A G5RV is 1 1/2-waves at 20 Meters, but is fed in the center. By moving the feed to the end, the feedpoint impedance will fall in the range of 130 - 170 Ohms, which, when fed through a 4:1 balun, and 50 ohm coax will yield an SWR of 1.6:1 or lower. This is easily in the range of even the most basic ATU's, and may be usable without a tuner at all.

The forward pattern will be about 90 - 120 degrees wide, with a F/B ratio of 6 - 20 dB, depending on tilt, height, etc... The 1-wave version, if fed directly with RG-8X or other 50-ohm coax, will have an SWR of about 2.5:1, and will need a tuner in line for most operations. The lightest weight feedline for the Tilted Wire would be 1/2-wave of twinlead from the feedpoint to the balun, and then coax to the ATU. The 1/2-wave section will bring the same impedance down to the balun, and you won't have the weight of the balun at the feedpoint.

The principle can be extended out as far as you have room. Just keep the total length at an integral multiple of 1/2-wave, and the feedpoint at a 1/4-wave or 3/4-wave point from the end. Keep this design in mind for Field Day!

73, Keith, KE2DI

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Date: Mon, 23 Jun 1997 23:04:00 EDT  
From: wb2vuo@juno.com (William K Hibbert)  
To: qrp-1@Lehigh.EDU  
Subject: [21846] Harmonically-related Dipoles for HF - 6 Mtrs  
Message-ID: <19970623.230303.2063.4.wb2vuo@juno.com>

Use your 80 & 40 Meter Antlers elsewhere...72/73, Keith, WB2VUO  
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## Harmonic Dipole Chart

(Frequencies in MHz)

A dipole will exhibit resonance at odd multiples of a half-wave, that is, showing a current node at the feedpoint. This will allow one to feed the dipole with coax and still tune it with the "typical" ATU easily. As the number of half-waves increase, the feedpoint impedance rises, and the SWR is >>NOT<< 1:1, but the increase in SWR won't be enough to drastically increase the losses unless the coax is very lossy to start. This allows one to cut a dipole for 75 Meters, and run it on its 7th harmonic on 10 Meters, or cut a dipole for the low end of 40 and run it on its 3rd harmonic on 15 Meters and the 7th harmonic on 6 Meters. Looking at the chart, you will notice a number of lengths that are useful on more than one band.

| Length<br>(ft) | [Wavelengths] |       |       |       |       |       |       |       |
|----------------|---------------|-------|-------|-------|-------|-------|-------|-------|
|                | 1/2           | 3/2   | 5/2   | 7/2   | 9/2   | 11/2  | 13/2  | 15/2  |
| 50             | 9.36          | 29.04 | 48.72 | 68.40 | 88.08 | >100  | >100  | >100  |
| 52             | 9.00          | 27.92 | 46.85 | 65.77 | 84.69 | >100  | >100  | >100  |
| 54             | 8.67          | 26.89 | 45.11 | 63.33 | 81.55 | 99.78 | >100  | >100  |
| 56             | 8.36          | 25.93 | 43.50 | 61.07 | 78.64 | 96.21 | >100  | >100  |
| 58             | 8.07          | 25.03 | 42.00 | 58.97 | 75.93 | 92.90 | >100  | >100  |
| 60             | 7.80          | 24.20 | 40.60 | 57.00 | 73.40 | 89.80 | >100  | >100  |
| 62             | 7.55          | 23.42 | 39.29 | 55.16 | 71.03 | 86.90 | >100  | >100  |
| 64             | 7.31          | 22.69 | 38.06 | 53.44 | 68.81 | 84.19 | 99.56 | >100  |
| 66             | 7.09          | 22.00 | 36.91 | 51.82 | 66.73 | 81.64 | 96.55 | >100  |
| 68             | 6.88          | 21.35 | 35.82 | 50.29 | 64.76 | 79.24 | 93.71 | >100  |
| 70             | 6.69          | 20.74 | 34.80 | 48.86 | 62.91 | 76.97 | 91.03 | >100  |
| 100            | 4.68          | 14.52 | 24.36 | 34.20 | 44.04 | 53.88 | 63.72 | 73.56 |
| 102            | 4.59          | 14.24 | 23.88 | 33.53 | 43.18 | 52.82 | 62.47 | 72.12 |
| 104            | 4.50          | 13.96 | 23.42 | 32.88 | 42.34 | 51.81 | 61.27 | 70.73 |
| 106            | 4.42          | 13.70 | 22.98 | 32.26 | 41.55 | 50.83 | 60.11 | 69.40 |
| 108            | 4.33          | 13.44 | 22.56 | 31.67 | 40.78 | 49.89 | 59.00 | 68.11 |
| 110            | 4.25          | 13.20 | 22.15 | 31.09 | 40.04 | 48.98 | 57.93 | 66.87 |
| 112            | 4.18          | 12.96 | 21.75 | 30.54 | 39.32 | 48.11 | 56.89 | 65.68 |
| 114            | 4.11          | 12.74 | 21.37 | 30.00 | 38.63 | 47.26 | 55.89 | 64.52 |
| 116            | 4.03          | 12.52 | 21.00 | 29.48 | 37.97 | 46.44 | 54.93 | 63.41 |
| 118            | 3.97          | 12.31 | 20.64 | 28.98 | 37.32 | 45.66 | 54.00 | 62.34 |
| 120            | 3.90          | 12.10 | 20.30 | 28.50 | 36.70 | 44.90 | 53.10 | 61.30 |
| 122            | 3.84          | 11.90 | 19.97 | 28.03 | 36.10 | 44.16 | 52.23 | 60.30 |

|     |      |       |       |       |       |       |       |       |
|-----|------|-------|-------|-------|-------|-------|-------|-------|
| 124 | 3.77 | 11.71 | 19.65 | 27.58 | 35.52 | 43.45 | 51.39 | 59.32 |
| 126 | 3.71 | 11.52 | 19.33 | 27.14 | 34.95 | 42.76 | 50.57 | 58.38 |
| 128 | 3.66 | 11.34 | 19.03 | 26.72 | 34.41 | 42.09 | 49.78 | 57.47 |
| 130 | 3.60 | 11.17 | 18.74 | 26.31 | 33.88 | 41.45 | 49.02 | 56.58 |
| 132 | 3.55 | 11.00 | 18.45 | 25.91 | 33.36 | 40.82 | 48.27 | 55.73 |
| 134 | 3.49 | 10.84 | 18.18 | 25.52 | 32.87 | 40.21 | 47.55 | 54.90 |
| 136 | 3.44 | 10.68 | 17.91 | 25.15 | 32.38 | 39.62 | 46.85 | 54.09 |
| 138 | 3.39 | 10.52 | 17.65 | 24.78 | 31.91 | 39.04 | 46.17 | 53.30 |
| 140 | 3.34 | 10.37 | 17.40 | 24.43 | 31.46 | 38.49 | 45.51 | 52.54 |
| 200 | 2.34 | 7.26  | 12.18 | 17.10 | 22.02 | 26.94 | 31.86 | 36.78 |
| 205 | 2.28 | 7.08  | 11.88 | 16.68 | 21.48 | 26.28 | 31.08 | 35.88 |
| 210 | 2.23 | 6.91  | 11.60 | 16.29 | 20.97 | 25.66 | 30.34 | 35.03 |
| 215 | 2.18 | 6.75  | 11.33 | 15.91 | 20.48 | 25.06 | 29.64 | 34.21 |
| 220 | 2.13 | 6.60  | 11.07 | 15.55 | 20.02 | 24.49 | 28.96 | 33.44 |
| 225 | 2.08 | 6.45  | 10.83 | 15.20 | 19.57 | 23.95 | 28.32 | 32.69 |
| 230 | 2.30 | 6.31  | 10.59 | 14.87 | 19.15 | 23.43 | 27.70 | 31.98 |
| 235 | 1.99 | 6.18  | 10.37 | 14.55 | 18.74 | 22.93 | 27.11 | 31.30 |
| 240 | 1.95 | 6.05  | 10.15 | 14.25 | 18.35 | 22.45 | 26.55 | 30.65 |
| 245 | 1.91 | 5.93  | 9.94  | 13.96 | 17.98 | 21.99 | 26.01 | 30.02 |
| 250 | 1.87 | 5.81  | 9.74  | 13.68 | 17.62 | 21.55 | 25.49 | 29.42 |
| 255 | 1.84 | 5.69  | 9.55  | 13.41 | 17.27 | 21.13 | 24.99 | 28.85 |
| 260 | 1.80 | 5.58  | 9.37  | 13.15 | 16.94 | 20.72 | 24.51 | 28.29 |
| 265 | 1.77 | 5.48  | 9.19  | 12.91 | 16.62 | 20.33 | 24.05 | 27.76 |
| 270 | 1.73 | 5.38  | 9.02  | 12.67 | 16.31 | 19.96 | 23.60 | 27.24 |

For the calculations, I used the long-wire formula from the ARRL "Antenna Book" which allows for the end effects in a long wire. The formula is:  $L(\text{ft}) = (492(n - .05)) / F(\text{MHz})$ , in which n is equal to the number of half-waves in the wire. If you are cutting a long wire for, say a Vee Beam or a Rhombic, the formula, using wavelengths is:  $L(\text{ft}) = (984(n - .025)) / F(\text{MHz})$ , where n is equal to the number of wavelengths in the wire.

I have used a dipole cut for 3.83 MHz on 80, 10 and 6 meters with good results for years. By adding a 40 Meter dipole, cut for the low end of 40 (7.02 MHz) I get good results on 40 and 15 also. This gives me 5 bands on a single feedline.

If you can latch onto a copy of Ed Noll's book, "73 Dipole and Long Wire Antennas" you will see other combinations that will work for you, and not just dipoles.

The snow is flying, so the >>REAL<< antenna season is here. What's a little frostbite between friends, anyway??

72/73, Keith, WB2VUO, QRP-L # 582, scQRP 40  
Trustee, KB2YTW/B QRPP 10 Meter Beacon (250 mW @ 28.2870 MHz)  
"In the Depths of the Great Bergen Swamp...FN13ac"

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Date: Mon, 23 Jun 1997 23:03:59 EDT  
From: wb2vuo@juno.com (William K Hibbert)  
To: qrp-l@Lehigh.EDU  
Subject: [21847] A Terminated Broad-Band Vee for 160 - 10 Mtrs  
Message-ID: <19970623.230303.2063.3.wb2vuo@juno.com>

The perfect antler for a 1-antenna Field Day...72/73, Keith, WB2VUO  
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Page 1

Andy, N2TUK left this for me, and I thought that it might be of  
interest to all in the Klub... Keith, KE2DI

From: N2TUK@WB2VPH.#WNY.NY.USA.NOAM  
To : KE2DI@KE2DI

Original from W1FYM to ANT@ALLUSA  
Keith this sounds like something we could try possibly  
73 es CUL de Andy  
N2TUK @ WB2VPH.#WNY.NY.USA.NA  
Bergen, New York 14416  
Date 02.07.94, Local time 14:19  
\*\*\*\*\*

This text describes a terminated-vee horizontal multi-band antenna with  
excellent bandwidth - used for 80 through 10 meters at Field Day, it  
outperforms Delta-Loops, dipoles, and inverted vees significantly. Used  
at  
5-watt level, made of thin wire, costs under \$5.00. If you can hear 'em,  
you can work 'em.  
...

The 'W1FYM VEE antenna' consists of two legs, each approximately 270  
feet long, spreading approximately 110-120 degrees, and terminated at  
the open end. For Field Day, a rope was strung between two trees to  
provide a 'feed end' support. The station was located near the midpoint  
of this rope. Thin, #24 magnet wire is used because it's cheap,  
available,

lightweight, and therefore easy to tension. Mason's line is used for all other support and tensioning.

Tensioning of #24 wire is easily done by tying a series of half-hitches around the wire and pulling firmly enough to bend the wire. All strain is taken up by using mason's line.

The horizontal line and support lines should be installed slack before the wire is run. Tighten the horizontal line after the wire has been installed.

The feed line is the wire itself, between the horizontal rope and the antenna tuner. If the wires are separated about two feet when they drop from the horizontal rope, no separating insulators will be needed. Be sure to leave plenty of wire for the feedline - that tiepoint is going to be about 20 feet up!

Each wire will leave the tent via stitching holes (no mosquitoes!), travel up to the horizontal support rope, bend to a horizontal position, and extend to a support point about 250 feet away. The far support point is thin rope or heavy string (we used Mason's line) which comes down from a nearby tree. The wire passes through a loop at the end of the support line and bends down at a non-critical angle (45 degrees). Where it hits the ground defines the ground rod location.

The ground rod goes in at whatever angle the rocks will permit - try for at least 2 feet. Tie a mason's line around the stake, then use a series of half-hitches around the #24 wire to take up the strain. Leave a couple of feet of loose wire.

The terminating resistor can be about 1/4 of the transmitter power, and should approximate 600 ohms. One end goes to the ground rod, the other end is connected to the loose end of the antenna wire. Be sure to strip the end of the antenna wire. Soldering is not necessary for short-term installations. Note that the resistor takes no strain.

Raise the support loop to the desired height before proceeding to the next step.

A second leg is run at about 110 degrees to the first using identical techniques.

Raise the horizontal support rope at this time, which should pull the

entire antenna tight.

The antenna pattern is broad and directed down the centerline of the vee, radiating towards the wide end.

A useful variation of this antenna uses a third leg. By selecting two adjacent wires you can select your antenna pattern.

Mac Harper, W1FYM - 76 Overlook Rd. - Glastonbury, CT 06033 (203)  
633-6295  
Fax (203) 659-3873            73, Mac w1fym @ w1edh.ct.usa.na

-----  
Date: Mon, 23 Jun 1997 23:03:59 EDT  
From: wb2vuo@juno.com (William K Hibbert)  
To: qrp-1@Lehigh.EDU  
Subject: [21848] The Inverted-Wye, A 3-wire Ground Plane  
Message-ID: <19970623.230303.2063.1.wb2vuo@juno.com>

I am running this on 17 Meters with good success...72/73, Keith, WB2VUO

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Page 1

### The "Wye", a 3-Wire Ground-Plane Antenna

So, here you sit. You just got a new radio, or the urge to run on a band that you haven't used your old radio on before. So you grab your "MEGA-RADIO" catalog, open it to the "ANTENNA" section, and just about CHOKe when you see the prices on the antlers for the band of interest.....

So, what is the cheap, er-r-r, frugal Ham to do? How about a Ground-Plane antenna. "Sure", you say, "Aluminum tubing just grows on the trees around here..." Maybe not, but good old #14 house wire is inexpensive, and readily available. What you need to do is to simplify the Ground-Plane (GP) antenna.

Looking at the GP, it is basically a 1/4-wave radiator, working against a "ground-plane". the ground-plane is an elevated counterpoise, which provides an electrical "image" of the radiating element. The simplest form of the GP would be a vertical element, with a 1/4-wave

wire extending out at a 90-degree angle from the feedpoint. This used to be shown in the "Radio Amateur's Handbook" as the "30 Up & 30 Out". It was a 30 foot vertical, mounted on the roof, with a single wire extending out 30 feet, and was fed with 300-ohm ribbon, or ladder line. Despite the simplicity, this is an effective antler, and is still a viable one today.

The next step up is the "Wye", a 3-wire GP. In this configuration, the radiating element is hung from the eaves, (if high enough), or a tree branch. The radials consist of 2 wires connected to the braid on the coax cable, and pulled out & down, forming an upside-down "Y". In its simplest version, on VHF, the wires can be solid #10 or #12, with the wires soldered directly to a chassis-type coax connector. Zack, KH6CP had just such an antenna in "QST" in 1992 or 1993, but I can't find the exact month right now. In "Ham Radio", back about 1985, W1JR had a 20 Meter version published, and Doug, W1FB has a 30 Meter version in his "Antenna Notebook". Nothing really new, but a good idea is ALWAYS worth repeating.

#### CHARTS & FORMULAS

You can't have anything on antlers without a chart or 3, and formulas are needed to beef up the information, so, here are some dimensions and formulas for the "Wye", for 40 - 2 Meters:

$$\text{Radiator(ft)} = 234/\text{F(Mhz)}$$

$$\text{Radial(ft)} = 246/\text{F(Mhz)}$$

| Frequency | Radiator | Radial |
|-----------|----------|--------|
| 7.1 Mhz   | 33.0'    | 34.7'  |
| 10.1 Mhz  | 23.2'    | 24.4'  |
| 14.2 Mhz  | 16.5'    | 17.3'  |
| 18.1 Mhz  | 12.9'    | 13.6'  |
| 21.2 Mhz  | 11.0'    | 11.6'  |
| 24.9 Mhz  | 9.4'     | 9.9'   |
| 28.4 Mhz  | 8.3'     | 8.7'   |
| 29.4 Mhz  | 8.0'     | 8.4'   |
| 52.5 Mhz  | 53.5"    | 56.2"  |
| 146.0 Mhz | 19.2"    | 20.2"  |

73, Keith, KE2DI

-----  
Date: Mon, 23 Jun 1997 21:05:17 -0600  
From: Niel Skousen <nskousen@scientechn.com>  
To: qrp-l@Lehigh.EDU  
Subject: [21849] HT-750 manual needed



Message-ID: <3.0.32.19970623210514.00698800@eaglerock.if.sciencetech.com>  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"

Recently aquired an HT-750, now I need to find a manual (in either English or Japanese)...

If anybody can make me a copy I'd really appreciate it.

TNX Niel

-----  
Date: Mon, 23 Jun 1997 22:34:35 CDT  
From: na5k@juno.com (Smitty Smith)  
To: qrp-1@Lehigh.EDU  
Subject: [21850] North Texas QRP Club (DFW Area) and FD  
Message-ID: <19970623.223530.11158.1.na5k@juno.com>

Howdy,

I am not sure if it has been made known yet, but the North Texas QRP Club (NORTEX) will be doing our annual Field Day outing again this year.

As in the past, we will be operating from Point North Park in Richardson, Texas. In addition, this year some of us will be meeting for an 8AM breakfast at the McDonalds just west of Highway 75 on Campbell Road.

Take Highway 75 to Richardson and exit at Campbell Road.  
Go west on Campbell road.

If you are joining us for Breakfast at 8AM, look for the McDonalds on the right, a block or two after turning onto Campbell Road.

Otherwise, proceed west on Campbell until the light at North Floyd Road. Turn right (north) on North Floyd Road, the University of Texas at Dallas will be on your left as you proceed north on Floyd Road.

Follow North Floyd Road and it will bear to the right and go under a rail road track. Just past the rail road track, on the right, is Point North Park. We will be setting up in the field that is adjacent to the rail road.

Set up will be probably start around 9 to 9:30 AM and we will be there until Sunday.

You ain't lived until you have done a QRP Field Day!

Questions? Contact me at 972-562-3049 (evenings) or via internet at  
hbs@texoma.net or na5k@juno.com

CUL,

Smitty, NA5K

-----  
Date: Mon, 23 Jun 1997 21:39:21 -0700 (PDT)  
From: Jim W7LS <w7ls@brigadoon.com>  
To: wb2vuo@juno.com  
Cc: qrp-1@Lehigh.EDU  
Subject: [21851] Re: A Terminated Broad-Band Vee for 160 - 10 Mtrs  
Message-ID: <199706240439.VAA20013@siskiyou.brigadoon.com>  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"

A couple of notes, here: One is that I found a cheap source of antenna wire ( I think). It is electric fence wire. Aluminum, 17 gauge. Costs \$15 for 400 meters (!!??!). That's around a penny a foot, gang.... And it's relatively strong, too. Being aluminum, the conductivity should be ok, except maybe that since rf travels along the skin of the conductor, and aluminum is oxide out there, it may not be so hot. Heck, beam antennas are made of aluminum. Should work.

Second thing: The terminations (600 ohm or so) at the distant ends of this array could maybe be a poor ground rod. You are trying to dissipate energy instead of having it reflect back, anyway. Why not soak it up in the ground rod (a deliberately poor one)?

What think, gang?

73 de Jim, W7LS

At 11:03 PM 6/23/97 EDT, you wrote:

>The perfect antler for a 1-antenna Field Day...72/73, Keith, WB2VUO  
>This text describes a terminated-vee horizontal multi-band antenna with  
>excellent bandwidth - used for 80 through 10 meters at Field Day, it  
>outperforms Delta-Loops, dipoles, and inverted vees significantly. Used  
>at  
>5-watt level, made of thin wire, costs under \$5.00. If you can hear 'em,  
>you can work 'em.  
>...

>  
>The 'W1FYM VEE antenna' consists of two legs, each approximately 270  
>feet long, spreading approximately 110-120 degrees, and terminated at  
>the open end. For Field Day, a rope was strung between two trees to  
>provide a 'feed end' support. The station was located near the midpoint  
>of this rope. Thin, #24 magnet wire is used because it's cheap,  
>available,  
>lightweight, and therefore easy to tension. Mason's line is used for all  
>other support and tensioning.  
> Tensioning of #24 wire is easily done by tying a series of half-hitches  
>around the wire and pulling firmly enough to bend the wire. All strain  
>is  
>taken up by using mason's line.  
> The horizontal line and support lines should be installed slack before  
>the  
>wire is run. Tighten the horizontal line after the wire has been  
>installed.  
>  
> The feed line is the wire itself, between the horizontal rope and the  
>antenna tuner. If the wires are separated about two feet when they drop  
>from the horizontal rope, no separating insulators will be needed.  
>Be sure to leave plenty of wire for the feedline - that tiepoint is going  
>to be about 20 feet up!  
> Each wire will leave the tent via stitching holes (no mosquitoes!),  
>travel  
>up to the horizontal support rope, bend to a horizontal position, and  
>extend  
>to a support point about 250 feet away. The far support point is thin  
>rope  
>or heavy string (we used Mason's line) which comes down from a nearby  
>tree.  
>The wire passes through a loop at the end of the support line and bends  
>down  
>at a non-critical angle (45 degrees). Where it hits the ground defines  
>the  
>ground rod location.  
> The ground rod goes in at whatever angle the rocks will permit - try  
>for  
>at least 2 feet. Tie a mason's line around the stake, then use a series  
>of  
>half-hitches around the #24 wire to take up the strain. Leave a couple  
>of  
>feet of loose wire.  
> The terminating resistor can be about 1/4 of the transmitter power, and  
>should approximate 600 ohms. One end goes to the ground rod, the other  
>end is connected to the loose end of the antenna wire. Be sure to strip  
>the end of the antenna wire. Soldering is not necessary for short-term  
>installations. Note that the resistor takes no strain.

> Raise the support loop to the desired height before proceeding to the  
>next step.  
>  
>  
> A second leg is run at about 110 degrees to the first using identical  
>techniques.  
> Raise the horizontal support rope at this time, which should pull the  
>entire antenna tight.  
>  
>The antenna pattern is broad and directed down the centerline of the  
>vee, radiating towards the wide end.  
>  
>A useful variation of this antenna uses a third leg. By selecting two  
>adjacent wires you can select your antenna pattern.  
>  
>Mac Harper, W1FYM - 76 Overlook Rd. - Glastonbury, CT 06033 (203)  
>633-6295  
>Fax (203) 659-3873            73, Mac w1fym @ w1edh.ct.usa.na  
>  
>  
>  
>  
>

-----  
Date: Mon, 23 Jun 1997 23:42:51 -0500  
From: Steve & Laura Yates <aa5tb@swbell.net>  
To: qrp-1@Lehigh.EDU  
Subject: [21852] QRP FD in N. TX?  
Message-ID: <33AF504A.B7B@swbell.net>  
MIME-Version: 1.0  
Content-Type: text/plain; charset=us-ascii  
Content-Transfer-Encoding: 7bit

I would like to know if anyone near the Fort Worth, Texas area is  
getting together for a QRP Field Day. I have not heard of any North  
Texas QRP Field Day get togethers yet. My family and I usually  
participate in the Lockheed Martin Radio Club Field Day but I am  
interested in a QRP FD like I've done in years past. I sometimes think  
I'm the only QRPer in Fort Worth, HI. Thanks.

Steve AA5TB

-----

Date: Mon, 23 Jun 1997 22:10:14 -0700  
From: John Horton <jhorton@primenet.com>  
To: Low Power Amateur Radio Discussion <qrp-l@Lehigh.EDU>  
Subject: [21853] Wanted : PCB CAD Drawing Program  
Message-ID: <33AF56B6.CD060302@primenet.com>  
MIME-Version: 1.0  
Content-Type: text/plain; charset=us-ascii  
Content-Transfer-Encoding: 7bit

I am interested in a drawing program for PCB's on the PC. I would like something like TANGO SCHEMATIC but can't afford the price. I am looking for something in the hundred dollar price range or less. I would like it geared toward PCB's. I have tried several inexpensive programs without much success. Any help would be appreciated.

de KE7CW, John

-----  
Date: Tue, 24 Jun 1997 03:39:15 -0400 (EDT)  
From: George Gingell <k3tks@u1.abs.net>  
To: "'njqrp@waterw.com'" <njqrp@waterw.com>  
Cc: QRP List <QRP-L@Lehigh.EDU>  
Subject: [21854] RE: 450-ohm ladder line dipole?  
Message-ID: <Pine.BSI.3.93.970624031302.11540E-100000@u1.abs.net>  
MIME-Version: 1.0  
Content-Type: TEXT/PLAIN; charset=US-ASCII

That would be John D. Heys, G3BDQ Practical Wire Antennas Effective HF Designs for the Radio Amateur. RSGB ISBN 0-900612-87-8 I paid \$ 14.00 for my copy 7/13/96 at Maryland Radio Center in Laurel, MD . It is 100 pages and something good on every one of them. I have darn near every Antenna Book known to man or Beast and I rate it in the Top 10. It is a builders book not a dreamers book. It has a couple of items not easily found elsewhere. I recommend it for anyones Library. Heck, while I am at it, I might as well give you all a couple of others to add to the Antenna Builders Library. All three are also from "Across the Pond".

HF ANTENNA COLLECTION ISBN 1-872309-08-9 (RSGB) by Erwin David, G4LQI \$ 18.00 at my favorite Radio Store.

HF ANTENNAS for all locations ISBN 1 872309 15 1 (RSGB) \$ 20.00  
Les Moxon, G6XN (The name tells it all.^)

Last but not least, The Antenna Experimenter's Guide by Peter Dodd, G3LDO

ISBN 0-9516024-0-3 I have the First edition Sept 1991. Purchased directly from Peter. I saw a new revised version at Dayton in a larger format I meant to pick up one, but forgot amid all the hustle at the QRP booth. RSGB booth was right across the aisle from QRP ARCI Booth. I do know of the UK Connection in Ohio. Bill Kelsey, N8ET of Kanga US carries some Publications in addition to a full line of QRP kits. I see the Peter Dodd book listed in his new catalog at \$15.00 I don't know if that is the original or the new RSGB version. Contact Bill at <kanga@bright.net> or <<http://qrp.cc.nd.edu/kanga/>> OH Yes, He also has a limited supply of G-QRP "SPRAT" back issues at \$ 1.00 each. Even more exciting is the news that He has been authorized to do a "REPRINT" of "BACK ISSUES" of "SPRAT" I am putting in my order tonight.

72 ES

QRP DX TU (C) 1986, G. Danny Gingell, K3TKS@abs.net "Danny"  
Maryland Milliwatt Club QRP Reference Library, (301)572-6789  
QRP ARCI Net Manager and Board of Director Member.

On Tue, 24 Jun 1997, Heron, George wrote:

> Dave,  
>  
> I'd love to browse that RSGB antenna book you mention below ... bring it  
> along to FD this weekend?  
>  
> Thanks.  
>  
> --George N2APB  
> g.heron@dialogic.com  
>  
> >-----Original Message-----  
> >From: Dave Maliniak [SMTP:dmaliniak@penton.com]  
> >Sent: Friday, June 20, 1997 3:07 PM  
> >To: njqrp@waterw.com  
> >Subject: Re: 450-ohm ladder line dipole?  
> >  
> >George:  
> >  
> >I have 100 feet of 300-ohm ladder line that I bought last year at a local  
> >fest. My intent was to make up an old-fashioned all-band doublet.  
> >Fifty-foot dipole legs fed in the center with 54 feet of the 300-ohm line  
> >to a tuner; should play from 10 to 80 meters.  
> >  
> >Any comments from the gang on this idea? I got it from a great little  
> >antenna book published by the RSGB called (I think) "Practical Wire

> >Antennas." The book is by a ham named Heys with a G call. Sorry, I don't  
> >have it with me here at the office.  
> >  
> >72 David N2SMH  
> >Glen Rock, NJ  
> >  
> >  
> >===== NJ QRP Club Mailing List =====  
> >To unsubscribe from this list, send email to listserver@waterw.com  
> >and put the text "unsubscribe njqrp" in the message. To post a  
> >message to the list, send email to njqrp@njqrp.org.  
> >===== NJ QRP Club Mailing List =====  
> >To unsubscribe from this list, send email to listserver@waterw.com  
> >and put the text "unsubscribe njqrp" in the message. To post a  
> >message to the list, send email to njqrp@njqrp.org.  
>

-----  
Date: Tue, 24 Jun 1997 10:10:49 +0100  
From: adams@chuck.dallas.sgi.com (Chuck Adams)  
To: kory@avatar.com  
Cc: qrp-1@Lehigh.EDU  
Subject: [21855] Re: Your memory keyer  
Message-ID: <199706240910.KAA12695@chuck.dallas.sgi.com>

Kory et.al.,

The small keyer on top of the SST in the "complete SST station" photograph is not a memory keyer. That is an old Tejas RF Technologies 8044ABM keyer, which is no longer available. One because Tejas got out of the kit business and two because Curtis got out of the chip business.

I doubt that there are more than 50 such keyers in the world, but then again you never know. The people that got the FAR circuit board and chip (also no longer available) from NorCal some time back could build the same thing, it's just the case that is going to be hard to find. Powered by 9V nicad and it does have the 'burp' problem on power up as the FAR circuits board did not do the anti-burp circuit.

It's very early in the a.m. and if I can get a quick photo with the digital camera then I can get the 'baby blue' 30M version of the SST on the page. Got a problem with the old 386 acting up and the TI 486DX laptop running Windows95 doesn't want to talk to the Epson Camera on the serial port. I just don't like DOS/Windows95 at all. :-)  
I need the Epson Developers kit badly to speed things up on this end.

Then I can get to the SGI system direct without two levels of downloading.  
Film at 11.

dit dit

Chuck Adams K5FO CP-60 adams@sgi.com

<http://reality.sgi.com/adams/>

WIMPS: Qs=039 30m=32 17m=5 12m=0 States=23/05/00 DX=03/00/00 QSLs=014

-----  
Date: Tue, 24 Jun 1997 06:17:29 -0600

From: Steve Galchutt <N0TU@webaccess.net>

To: w7ls@brigadoon.com

Cc: "\"Low Power Amateur Radio Discussion\"" <qrp-1@Lehigh.EDU>

Subject: [21856] Re: Aluminum Fence Wire Antennas?

Message-ID: <33AFBAD5.345F@webaccess.net>

MIME-Version: 1.0

Content-Type: text/plain; charset=us-ascii

Content-Transfer-Encoding: 7bit

Hi Jim...I like ur idea...I'm already using the steel/galv. fence wire.  
It's a little stronger/heavier and you can soldier to it if you scrape  
the galvanizing crud off the steel! I've got some long spans in my  
horizontal loop (300') and the steel hangs in their(sags)! But the  
aluminum might be lighter/strong enough to do the something with less  
sag?? Anyway of knowing how this would work before just doing it? Steve

Jim W7LS wrote:

>

> A couple of notes, here: One is that I found a cheap source of antenna wire  
> ( I think). It is electric fence wire. Aluminum, 17 gauge. Costs \$15 for 400  
> meters (!!??!). That's around a penny a foot, gang.... And it's relatively  
> strong, too. Being aluminum, the conductivity should be ok, except maybe  
> that since rf travels along the skin of the conductor, and aluminum is oxide  
> out there, it may not be so hot. Heck, beam antennas are made of aluminum.  
> Should work.

> Second thing: The terminations (600 ohm or so) at the distant ends  
> of this array could maybe be a poor ground rod. You are trying to dissipate  
> energy instead of having it reflect back, anyway. Why not soak it up in the  
> ground rod (a deliberately poor one)?

> What think, gang?

>

> 73 de Jim, W7LS

-----



CW, Thy original mode. QRP, an intelligent use of Bandwidth & Energy!  
N0TU/hw8/49er/NW8020/SW40/38s/solar/backpack-mobile... QRP-L # 911  
My homepage - <http://www.webaccess.net/~S&P> ARS# 206 CQC# 394

-----  
Date: Tue, 24 Jun 97 08:25:41 EDT  
From: gmdiana@kodak.com (Gary Diana )  
To: qrp-1@Lehigh.EDU  
Cc: wb8ygg@juno.com, gmdiana@kodak.com  
Subject: [21857] QRP FD station  
Message-ID: <9706241225.AA12048@monolith.bisco.kodak.COM>

Hello All -

Once again this year, Brad WB8YGG and I will be operating a battery operated FD station as N2JGU. Our location is about 45 southwest of Rochester NY. The site is "secret", so no lat/lon is available ;^)

We'll be operating with a TenTec Argosy transceiver, running 5w, and using a couple different dipoles. We will be testing a PIC-based FD logger as well.

We operate just about the entire time, with a break between 3am and 6am sunday morning.

Good luck to everyone, hopefully we'll have better propagation than last year!

Best regards.  
- Gary N2JGU  
gmdsr@vivanet.com  
<http://www.vivanet.com/~embres>

-----  
Date: Tue, 24 Jun 1997 08:56:01 EDT  
From: ab5uacw@juno.com (Clifton W Sikes)  
To: qrp-1@Lehigh.EDU  
Subject: [21858] Special Event Station  
Message-ID: <19970624.075354.4911.1.ab5uacw@juno.com>

On 12 July, there will be a special event station, from Okemah, Ok. The occasion is the birthday of Woody Guthrie. We will operate under the call



Norcal #262 QRP-L #219 QRP-ARCI #8303 NE-QRP #213 CQC #045  
CQrp #15 NJ-QRP #50 AK-QRP #52 NW-QRP #454 FISTS #3184  
Personal Web Page: <http://www.geocities.com/capecanaveral/9773/>

-----

-----

Date: Tue, 24 Jun 1997 09:43:05 -0500 (EST)  
From: "James C. Owen, III" <owen@piper.eeel.nist.gov>  
To: qrp-l@Lehigh.EDU  
Subject: [21860] Re: Watching an Expert Troubleshoot (Long)  
Message-ID: <34988.owen@piper.eeel.nist.gov>

In message Tue, 24 Jun 1997 00:17:42 +0100,  
adams@chuck.dallas.sgi.com (Chuck Adams) writes:

> I use a #11 Exacto Knife for a lot of stuff. BUT, this is a dangerous  
> I use this knife to very very carefully scrape every  
> lead on every part. I don't trust the flux to remove any oxide at all.  
> Works for me. And if you scrape the coating off the magnetic wire on the  
> toroids and tin them first you will eliminate 75% of your problems from  
> the start.

I have to agree with you on the Exacto Knife Chuck. There is a better tool  
and much safer than the knife to scrape parts. It's called a component lead  
cleaner. Basically it's a 1" wide piece of braid slipped over a U shaped  
piece of spring steel. Place the lead between the two sides squeeze closed  
and pull the part out while turning--you get oxide free leads with no chance  
of nicks that you could have with a knife. It's available from Techni-tool  
1-610-941-2400 FAX 1-610-828-5623 P/N 182S0016 \$4.95. Pg 153 catalog #59.

> Also, don't save a penny on the sockets.  
> Don't be cheap when it comes to sockets.

Once again correct. I've always liked the Robinson Nugent line with gold  
contacts but I've also had good luck with tinned no name sockets. There are  
several brands that use a round socket and these have seemed to be ok. Just  
check the cheap sockets to be sure that the contacts makes contact on BOTH  
SIDES of the IC pin. There are a few that have what I refer to as a  
half-contact and these are trash.

72/73 Jim K4CGY QRP-L #72

-----

Date: Tue, 24 Jun 1997 10:35:19 -0400 (EDT)  
From: N2QCE@aol.com  
To: tenten-1@Lehigh.EDU, qrp-1@Lehigh.EDU, bnlarc-1@bnl.gov, liqrp@waterw.com  
Subject: [21861] Re: CW on 10m!  
Message-ID: <970624103134\_1544139890@emout06.mail.aol.com>

In a message dated 97-06-23 22:20:58 EDT, Dean KB8YUK wrote:

> I vote for 28.170MHz for CW monitoring, covers everyone on 10 meters.

I listen to 28.170 often and think that Dean is right. I, too, vote for 28.170 MHz as a regular monitoring freq. Best 73 de

John M. Evans N2QCE  
E-mail n2qce@aol.com  
<http://www.islandlink.com/n2qce>

-----  
Date: Tue, 24 Jun 1997 09:51:33 -0500  
From: Brian Cieslak <brianc@ams-i.com>  
To: "'QRP-L'" <qrp-1@Lehigh.EDU>  
Subject: [21862] Wanted: Your dead 38S  
Message-ID: <c=US%a=\_%p=Adaptive\_Micro\_S%l=AMS-I\_SERVER\_-970624145133Z-1429@ams-i-server-1.ams-i.com>  
MIME-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"  
Content-Transfer-Encoding: 7bit

Do you have a 38S kit that you've become so frustrated with that you just tossed it in the junk box hoping to never see it again...or worse...its sitting in the garbage can waiting for the grand tour to the dump so your buddies from the Club won't know you couldn't get it working.

How about throwing them out my way...I am interested in doing some experimenting and thought I would check the recycling option before I consider getting new kits. So if you have some 38s cadavers floating around and would like to help out I would appreciate it.

Here's the deal I'll make to you....If I can fix it in one evening without adding any new parts I'll send it back. If I cant' fix it then it will be used to further science.

I am only interested in the non working PCB assemblies that you have

totally given up on....keep those enclosures for your SST or other projects.

Brian AE9K

-----  
Date: Tue, 24 Jun 1997 10:08:13 -0400  
From: rhiller@sysdev.com (Rick Hiller)  
To: qrp-1@Lehigh.EDU  
Subject: [21863] RE: Double Delta Array, etc.  
Message-ID: <2.2.32.19970624140813.0069297c@stephen.sysdev.com>  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"

Keith,

Your double delta is a great implementation of a delta loop phased array. Your antenna equates to two  $1/3$  wavelength vertical dipoles fed in phase with (approximately)  $.5$  wavelength spacing. The semi-horizontal sides of the loop are the phasing lines for these verticals. Current maxima's appear at the center of each vertical section. Feed Z is approximately 120 ohms divided by 2 as the loops are in parallel.

Check out the patterns in the antenna books for this type of phased array antenna.  $1/2$  wave spaced elements fed in phase.

This one needs to be run on EZNEC and I'm sure someone will.

I have always promoted the Delta loop as being the most flexible antenna configuration in amateur use today. It can be used to generate vertical or horizontal polarization depending on where it is fed and logistically it can be hung from a single point if desired. They can be used close to the ground and shortened (at the proper points) with very little detriment in performance. Phasing the loops, as you have shown, is easy too. Why hang a dipole when you can hang a delta loop!

Great stuff, Keith, I enjoyed it.

72/73...Rick...W5RH

System Development, Inc. Houston, Texas

"SDI--Providing high performance hardcopy plotting solutions to the world"

-----  
Date: Tue, 24 Jun 1997 11:40:04 EDT  
From: w7rfm@juno.com (John E Hirsch)  
To: "Low Power Amature Radio Discussion" <qrp-l@Lehigh.EDU>  
Subject: [21864] Rainbow tuner  
Message-ID: <19970624.083646.2838.0.w7rfm@juno.com>

Hi

Has anyone tried using the rainbow tuner on a hamstick to tune it in?

I have a portable made out of a Hamstick with the counterpoise on it but can not seem to get its swr to come down.

It stands on top of a 12' mast and the counterpoise are conected to the mounting bracket. Swr is up above 3:1 and I can not get it to come down. I am in hopes of using the rainbow to help bring it down.

de w7rfm      John

-----  
Date: 24 Jun 97 12:03:44 EDT  
From: "W. D. Lindsey" <70511.3041@CompuServe.COM>  
To: QRP Discussion Group <QRP-L@Lehigh.EDU>  
Cc: "W. D. (Doc) LINDSEY" <70511.3041@CompuServe.COM>  
Subject: [21865] WTB:Corsair II  
Message-ID: <970624160344\_70511.3041\_IHD82-1@CompuServe.COM>

Gang:

Interested in buying or trading for a Ten-Tec Corsair II. If you have one available or know of a possible source, please let me know. Thanks!

72/73,  
--Doc/K0EVZ qrp-l 861

-----  
Date: Tue, 24 Jun 1997 11:13:21 -0500 (CDT)  
From: "Matt Wright, AE4JM" <cnw@hiwaay.net>

To: qrp-1@Lehigh.EDU  
Subject: [21866] QRP Forum?  
Message-ID: <Pine.OSF.3.94.970624110546.6372A-1000000@fly.HiWAAAY.net>  
MIME-Version: 1.0  
Content-Type: TEXT/PLAIN; charset=US-ASCII

Hey Gang,

The local Huntsville Hamfest, which usually bring in 6 or 7 thousand people, is the largest in our area, even though Atlanta, Birmingham, and Nashville aren't that far away, the Huntsville is much better I hear than any of those. Although I can't back that up due to I've never been to the above listed except the Huntsville Hamfest for the past 3 years.

Anyways, I was think that it would be much better of a hamfest with a QRP Forum. I contacted the chairman of the Huntsville Hamfest, Johnny, KR4F I believe it is, and he said that I could try and put one together. BTW, Johnny is on this list he said.

The hamfest is August the 16th and 17th. I was wandering if anyone would like to come over and do a little talk, whether it be on antennas, QRP building techniques, QRP kits and that type of thing. Anything to do with QRP/homebrewing activities. If you wouldn't like to do that maybe you could help me get slides, pictures, of QRP items, maybe some hand out items for the forum.

Nothing is solid yet, but it sure would be nice to get together about a 1 hour forum. So if you have any slides, handouts, pictures, or anything like that that you'd donate, or loan out, I'd sure be interested. So whatever you got, I'm interested!

Thanks a bunch and Best 72/73 DE  
Matt, AE4JM

--

JCARC-ARCI 9178-ARRL-ARRL ORS-Ten Ten 66932-VP 2855-WAS  
Matt Wright, ph.(205)228-6547 packet:AE4JM@K4BFT.#HSV.AL.USA.NA  
<http://fly.hiwaay.net/~cnw> email: [cnw@hiwaay.net](mailto:cnw@hiwaay.net)  
Rigs built: Ramsey rcvr 40m NC38S SW30-40 NC49'er NC40A/KC1 GM-20

-----  
Date: Tue, 24 Jun 1997 10:12:28 -0600  
From: John Evans - N3Q00 <[jaevans@codenet.net](mailto:jaevans@codenet.net)>  
To: qrp-1@Lehigh.EDU

Subject: [21867] RFI: vanity call suggestions  
Message-ID: <33AFF1EC.43F6@codenet.net>  
Mime-Version: 1.0  
Content-Type: text/plain; charset=us-ascii  
Content-Transfer-Encoding: 7bit

Alright folks,

Now it is your chance to get back at me for all those wise-cracks of late.

I have solicited suggestions from family, friends, ham-friends, etc. and am still wishy-washy with respect to filing for a vanity call. I originally wanted to apply for NH0J, my first name in reverse, but the call is reserved for the Mariana Islands - nothing short of moving there will get me that vanity call. I doubt I will get into contesting at all in my life, so calls which address those particular needs are not required. Short calls are nice, but are not everything.

I'd like to get a call with name or initials and I have narrowed it down to the following, mostly bad choices:

KJ0HN  
NJ0HN  
K7JE  
N7JE

Anyway, I solicit your expert advice to help push me over the edge and fill out the forms. I will even take suggestions outside of the above realm, since my current call is kinda long (N3Q00).

es BTW, did anyone ever come up with a good reason why the QRP suffix calls are not assigned ??

To keep this discussion off the list, please DO email me directly.

thx  
john

|                                                                                 |                                  |
|---------------------------------------------------------------------------------|----------------------------------|
| John A. Evans                                                                   | Chief Systems Administrator      |
| Office: (719) 528-1800 x164                                                     | Titan Client/Server Technologies |
| Fax: (719) 528-1888                                                             | 1115 Elkton Drive, Suite 200     |
| email: <a href="mailto:jaevans@cos.cst.titan.com">jaevans@cos.cst.titan.com</a> | Colorado Springs, CO 80907-3535  |

Norcal #262 QRP-L #219 QRP-ARCI #8303 NE-QRP #213 CQC #045  
CQrp #15 NJ-QRP #50 AK-QRP #52 NW-QRP #454 FISTS #3184  
Personal Web Page: <http://www.geocities.com/capecanaveral/9773/>



-----  
Date: Tue, 24 Jun 1997 10:35:42 -0600  
From: "Bob Follett" <bfollett@ditell.com>  
To: "Bob Hightower" <ki7mn@dancris.com>  
Cc: "QRP-L Group" <qrp-l@Lehigh.EDU>  
Subject: [21868] Re: SLV/MMA Elevated?  
Message-ID: <199706241635.KAA32512@mars.ditell.com>  
MIME-Version: 1.0  
Content-Type: text/plain; charset=ISO-8859-1  
Content-Transfer-Encoding: 7bit

Hi Bob:

<<Yep, that would work. I am going to try to adapt an RC model servo to mount on the coil form and see if that has enough 'push' to do it (after field day).>>

(QRP-L readers) Background: Bob is experimenting to use the SLV as an elevated groundplane to reduce losses....The issue is that you can't manually reach the coil to tune it in this configuration.

Now you're on to something. Except, now that you gave me the idea, I would do it the way you can use a servo to drive a sail on an RC sailboat. You don't need the electronics, just the mechanics for a large servo, (they have tons of torque if you buy one for 1/4 scale), and you just wire up a SPDT switch to drive it either way. You may want to use a servo designed for retracting landing gear, as they have higher torque, and more importantly, run at about .5 Sec per 60 degrees of motion. At the top and bottom of the brass rail on the coil, you add microswitches, and they just cut the connection to that side of the SPDT switch as a travel limiter.

Now, the question is, what to mount on the servo to drive the coil contact in a linear fashion? You could set it up like a string dial on an old radio, with one end being the driving wheel, but slippage may be a problem -- and you need to find a suitable wheel that would mount on the servo. Sailboat folk have a special servo wheel that has indents to be used with HD keychain to make a non-slip loop, but finding it may be a problem (?)

Ok QRP-L Dudes and Dudettes,

Any further ideas along this line? Getting the SLV/MMA even 4-5' off the ground for sloping ground wire would come fairly close to optimizing what could be done with this antenna (still have to change the upper element between 80, 40, 20, and 17M up -- I wonder if three or four stubs would work without additional losses? Interaction wouldn't matter otherwise, as you have

continuous tuning to compensate). ((And no nit-picking Cecil -- we know this won't compete with an EDZ :-)) ).

-----  
Bob Follett AB7ST, QRP-L # 129, NorCal, ARCI, 10-10, ARS  
2861 Estates Dr. VOICE: 801.649.6457  
Park City, UT 84060 E-mail: bfollett@ditell.com

-----  
Date: Tue, 24 Jun 97 12:35:04 EDT  
From: jeverhar@camden.lmco.com  
To: w7rfm@juno.com  
Cc: qrp-l@Lehigh.EDU, njqrp@njqrp.org  
Subject: [21869] Re: Rainbow tuner  
Message-ID: <9706241635.AA09617@train11.CAMDEN.LMCO.COM>

> From owner-qrp-l@lehigh.edu Tue Jun 24 11:42:19 1997  
> Date: Tue, 24 Jun 1997 11:40:04 EDT  
> Reply-To: w7rfm@juno.com  
> Sender: owner-qrp-l@lehigh.edu  
> From: w7rfm@juno.com (John E Hirsch)  
> To: "Low Power Amateur Radio Discussion" <qrp-l@lehigh.edu>  
> Subject: Rainbow tuner  
> X-To: "Low Power Amature Radio Discussion" <qrp-l@Lehigh.EDU>  
> X-Mailer: Juno 1.15  
> X-Juno-Line-Breaks: 0-3,5-6,8-11  
> X-Listprocessor-Version: 8.1 beta -- ListProcessor(tm) by CREN  
> Content-Length: 414  
>  
> Hi  
>  
> Has anyone tried using the rainbow tuner on a hamstick to tune it in?  
>  
> I have a portable made out of a Hamstick with the counterpoise on it but  
> can not seem to get its swr to come down.  
>  
> It stands on top of a 12' mast and the counterpoise are conected to the  
> mounting bracket. Swr is up above 3:1 and I can not get it to come down.  
> I am in hopes of using the rainbow to help bring it down.  
>  
> de w7rfm John  
>  
>

Hi John,

I'm afraid you won't have much luck using the Rainbow tuner with a Hamstick.

The tuner is not a general purpose tuner, it is intended for high impedance end-fed half waves. The Hamstick, on the other hand looks electrically like a low impedance quarter wavelength antenna at resonance.

There *are* some thoughts in the Rainbow manual on other network configurations that may assist you provided that you don't mind modifying the tuner. Something like the series resonant configuration in Figure 7 may work with the Hamstick. It may have a limited tuning range, though.

Please feel free to experiment. I don't want to discourage that, but felt that I must confirm the design goal of the tuner so that you don't get frustrated in a nearly impossible situation.

Please report your successes (and failures, too) to this group. We are all interested in learning!

72/73,

Joe E., N2CX

-----  
Date: Tue, 24 Jun 1997 10:27:24 -0700 (PDT)  
From: Kory Hamzeh <kory@avatar.com>  
To: Bob Follett <bfollett@ditell.com>  
Cc: Low Power Amateur Radio Discussion <qrp-1@Lehigh.EDU>  
Subject: [21870] Re: SLV/MMA Elevated?  
Message-ID: <Pine.BSI.3.91.970624102442.10473A-1000000@avatar.avatar.com>  
MIME-Version: 1.0  
Content-Type: TEXT/PLAIN; charset=US-ASCII

I'm using an SD-20, and what I have done is mount the coil near the very top of the second sections. This way, the coil is about 8 feet off of the ground. When I need to change bands, I gently push down on the second section, bring the coil down, move the wiper, and extend the pole back up. Seems to work pretty well.

Kory

On Tue, 24 Jun 1997, Bob Follett wrote:

> Hi Bob:

>  
> <<Yep, that would work. I am going to try to adapt an RC model servo to mount  
> on the coil form and see if that has enough 'push' to do it (after field  
> day).>>  
>  
> (QRP-L readers) Background: Bob is experimenting to use the SLV as an  
> elevated groundplane to reduce losses....The issue is that you can't manually  
> reach the coil to tune it in this configuration.  
>  
> Now you're on to something. Except, now that you gave me the idea, I would do  
> it the way you can use a servo to drive a sail on an RC sailboat. You don't  
> need the electronics, just the mechanics for a large servo, (they have tons of  
> torque if you buy one for 1/4 scale), and you just wire up a SPDT switch to  
> drive it either way. You may want to use a servo designed for retracting  
> landing gear, as they have higher torque, and more importantly, run at about  
> .5 Sec per 60 degrees of motion. At the top and bottom of the brass rail on  
> the coil, you add microswitches, and they just cut the connection to that side  
> of the SPDT switch as a travel limiter.  
>  
> Now, the question is, what to mount on the servo to drive the coil contact in  
> a linear fashion? You could set it up like a string dial on an old radio,  
> with one end being the driving wheel, but slippage may be a problem -- and you  
> need to find a suitable wheel that would mount on the servo. Sailboat folk  
> have a special servo wheel that has indents to be used with HD keychain to  
> make a non-slip loop, but finding it may be a problem (?)  
>  
> Ok QRP-L Dudes and Dudettes,  
>  
> Any further ideas along this line? Getting the SLV/MMA even 4-5' off the  
> ground for sloping ground wire would come fairly close to optimizing what  
> could be done with this antenna (still have to change the upper element  
> between 80, 40, 20, and 17M up -- I wonder if three or four stubs would work  
> without additional losses? Interaction wouldn't matter otherwise, as you have  
> continuous tuning to compensate). ((And no nit-picking Cecil -- we know this  
> won't compete with an EDZ :-)) ).  
> -----  
> Bob Follett AB7ST, QRP-L # 129, NorCal, ARCI, 10-10, ARS  
> 2861 Estates Dr. VOICE: 801.649.6457  
> Park City, UT 84060 E-mail: bfollett@ditell.com  
>  
>  
>

-----  
Date: Tue, 24 Jun 1997 10:57:38 -0700 (PDT)  
From: Monte Stark <ku7y@sage.dri.edu>

To: Bob Follett <bfollett@ditell.com>  
Cc: Low Power Amateur Radio Discussion <qrp-l@Lehigh.EDU>  
Subject: [21871] Re: SLV/MMA Elevated?  
Message-ID: <Pine.SUN.3.90.970624105459.18166A-100000@vortex>  
MIME-Version: 1.0  
Content-Type: TEXT/PLAIN; charset=US-ASCII

Hi Bob,

Gee, motor driven tuning! Good idea.

I think I would lean toward using a threaded rod to move the sliding spring contact.

HyGain used to do this on one of their 20m yagis. I know cuz I have one! It tuned the gama match shorting stub.

Go to it guys.....and remember, the first one there wins....

cul,

73, Ron,        SOWP 5545M,

.....KU7Y.....ARCI #8829.....Monte "Ron" Stark.....  
....ku7y@sage.dri.edu.....Washoe Lake, Nevada....  
....QRP-L #17...ARS #49...NorCal #330.....NRA LIFE.....

-----  
Date: Tue, 24 Jun 1997 11:08:06 -0700  
From: Ed Loranger <we6w@qsl.net>  
To: bfollett@ditell.com  
Cc: Low Power Amateur Radio Discussion <qrp-l@Lehigh.EDU>  
Subject: [21872] Re: SLV/MMA Elevated?  
Message-ID: <33B00D06.55AF@qsl.net>  
Mime-Version: 1.0  
Content-Type: text/plain; charset=us-ascii  
Content-Transfer-Encoding: 7bit

This is interesting. It seems that something as easy to erect as the SLV, one would probably slide a section down and up as Kory mentioned.

But then, why can't we make it easier anyway!

I was thinking, maybe use the old Brass Slug trick, but instead maybe use a shorting brass sleeve.

Put it above the coil and connect to it a 1/4 inch hardwood rod that can slide up/down to short out coil turns.

I don't know how well it would work, but if it does I get 30 percent of the take!

Good luck.

-Ed Loranger

--

72/73 de we6w qrp es cw ONLY (From non-ham to extra in one day!)  
HW-8;OHR-100, Pixie2, Johnson Viking II w/VF0.  
QRP-L#1068/Norcal#2227/ARCI#????  
mailto:we6w@qsl.net <http://www.qsl.net/we6w>

-----  
Date: Tue, 24 Jun 1997 13:15:30 -0500  
From: Bob Liesenfeld <wb0poq@visi.com>  
To: QRP-L reflector <qrp-l@Lehigh.EDU>  
Subject: [21873] Standoffs  
Message-ID: <33B00EC2.4E78F2D@visi.com>  
MIME-Version: 1.0  
Content-Type: text/plain; charset=us-ascii  
Content-Transfer-Encoding: 7bit

Hi,

I am a real fan of 'dead-bug' construction. Stable, small, fast. I have often used high value resistors as tie points for floating components. Any of you guys have another idea for this function?

72!

--

Genuine E-mail From the Land of the Everlasting Icicle...  
Bob Liesenfeld  
wb0poq@visi.com

-----  
Date: Tue, 24 Jun 1997 11:32:07 -0700  
From: Ed Loranger <we6w@qsl.net>  
To: wb0poq@visi.com  
Cc: Low Power Amateur Radio Discussion <qrp-l@Lehigh.EDU>  
Subject: [21874] Re: Standoffs  
Message-ID: <33B012A7.4241@qsl.net>  
Mime-Version: 1.0

Content-Type: multipart/mixed; boundary="-----6A767554450F"

This is a multi-part message in MIME format.

-----6A767554450F

Content-Type: text/plain; charset=us-ascii

Content-Transfer-Encoding: 7bit

Ground Plane or "Dead Bug" is my favorite construction method. Because of my microwave communications background I do not advocate a lot of leakage paths with HI-Z standoffs. In fact, any stand-off not providing a Z-match can result in feedback at UHF+ frequencies -- resulting in oscillation in amplifier designs.

But for HF work this problem is less manifest. Ways around the Stand-off is to use your bypass capacitors for support.

I've attached something I wrote for a guy who had never attempted/knew about this method.

Hope you enjoy it...

-Ed Loranger

--

72/73 de we6w qrp es cw ONLY (From non-ham to extra in one day!)

HW-8;OHR-100, Pixie2, Johnson Viking II w/VFO.

QRP-L#1068/Norcal#2227/ARCI#????

mailto:we6w@qsl.net <http://www.qsl.net/we6w>

-----6A767554450F

Content-Type: message/rfc822

Content-Transfer-Encoding: 7bit

Content-Disposition: inline

Message-ID: <33845AC7.31E0@qsl.net>

Date: Thu, 22 May 1997 07:40:07 -0700

From: Ed Loranger <we6w@qsl.net>

Organization: Electronics Industry

X-Mailer: Mozilla 3.0Gold (X11; U; HP-UX A.09.05 9000/725)

MIME-Version: 1.0

To: atkfk@asuvm.inre.asu.edu

Subject: Re: Ground Plane construction

References: <33837B8D.5AD3@asuvm.inre.asu.edu>

Content-Type: text/plain; charset=us-ascii

Content-Transfer-Encoding: 7bit

Hi Jimmy, this kind of construction is common in engineering labs. I work at a MAJOR Electronics company. Have been here

since 1980.

Basically you get a copper clad board. No holes, just a regular copper board. You will eventually be turning transistors upside down, leads up and solder resistors directly. The isolation of the +power supply is provided by using a sharp hobby knife to cut 1/8 inch strips forming an island, usually across the top section, which will be the +Battery. The ground plane will be the negative. For UHF work, (Yes I have designed a two-stage 300MHZ-1GHZ broadband antenna AMP with this technique!), You can drill larger holes and actually sink the transistor into the hole with just the leads coming up. Attach the leads to micro-strip line formed with the knife.

The best way to make stripline is to make two parallel cuts, very close to each other 1/32 inch, gently pry up an end and pull the copper away using pliers. Repeat approx 1/4 inch away thereby leaving a trace on the board for about 50ohms impedance.

But without getting into UHF and into the 1GHZ+ range, you don't need microstrip design. Just solder, point to point, I find it best to carefully lay out the circuit, paying attention to where components will be soldered to the ground plane. Bypass capacitors, etc. provide support when strategically placed.

Good luck! I hope you can find some articles, friends, or visit the local electronics firm and ask about this. I've got tons of proto-types at home that are part of my junk box.

-Ed Loranger

--

72/73 de WE6W QRP .3W QSO 7040 KHz SK ee (First and Last call sign!)  
HW-8;OHR-100, Pixie2, Johnson Viking II w/VFO.  
mailto:we6w@qsl.net QRP-L member #1068.  
<http://www.qsl.net/we6w>

-----6A767554450F--

-----

Date: Tue, 24 Jun 1997 14:41:11 -0400  
From: Ed Tanton <n4xy@bellsouth.net>



To: wb0poq@visi.com  
Cc: homebreq@qsl.net, QRP-L Reflector <qrp-l@Lehigh.EDU>  
Subject: [21875] Re: Standoffs for Brassboard construction  
Message-ID: <3.0.1.32.19970624144111.00a23210@mail.atl.bellsouth.net>  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"

We used to make batches of (usually) 2 terminal small insulated staked terminals. We did this by cutting narrow & very thin fiberglass strips ~ 3/16 inch wide. We would drill a strip for staking the terminals, and then cut then to length-for two terminals plus about 1/8" or 1/16" on either side. Whatever that length, you also cut a bunch of non-drilled pieces the same length. You then stake the terminals into the pieces. Next you epoxy the non-drilled bottoms on. What you then have is a tiny, 2 terminal (or whatever) insulated terminal strip that can literally be placed almost anywhere. You can epoxy them down, or-if the surface allows-use superglue. This was aerospace stuff, and they HAD to be able to place small enamel wires at certain points on an aluminum block-hence the method. (The alternative most used was the press-fit TFE terminal... but sometimes you couldn't make a hole-or learned something 'new' right at or during production.) There were usually some left over after each project, and I always tried to run into all of them I could instead of throwing them out. (Traceability requirements on the stake-terminals, the fiberglass, and the epoxy-not to mention such things as mix dates, humidity when mixed, etc.-so they could not be used in new projects.) I doubt I accumulated more than 20-25 of them, and over the 20+ years since I have used them VERY sparingly... so I still have maybe 10-15. When you need the kind of instant insulated placement point they'll provide, they are wonderful. Granted not something you could casually use on a brassboard, but nice all the same. Not cheap, not easy, but great!

At 01:15 PM 6/24/97 -0500, you wrote:

>Hi,  
> I am a real fan of 'dead-bug' construction. Stable, small, fast. I have often  
>used high value resistors as tie points for floating components. Any of you guys  
>have another idea for this function?  
> 72!  
>--  
>Genuine E-mail From the Land of the Everlasting Icicle...  
>Bob Liesenfeld  
>wb0poq@visi.com  
>  
>  
>  
72/73

---

Ed Tanton N4XY  
189 Pioneer Trail  
Marietta, GA 30068-3466

EMAIL: n4xy@bellsouth.net  
TEL: (770)579-3933 V/MBX/FAX

---

|                |              |             |            |       |
|----------------|--------------|-------------|------------|-------|
| QRP-ARCI #7663 | G-QRP #6779  | OK-QRP #172 | QRP-L #758 |       |
| AdvRC #140     | NORCAL #1779 |             | NCDXF      | SEDXC |
| Life Member:   | ARRL         | AMSAT       | INDEXA     | QCWA  |

---

INTERESTS: DX QRP BoatAnchors Test Equipment Photography  
CW: 99.9% QRP: 95-100% (Mood swings!) Mercury Paddle #0214

~~~~~  
"Think you can, think you can't: either way you're right!" Henry Ford
~~~~~

-----  
Date: Tue, 24 Jun 1997 13:41:37 -0500  
From: randy\_ott@juno.com (Charles R Ott)  
To: jhorton@primenet.com  
Cc: qrp-l@Lehigh.EDU  
Subject: [21876] Re: Wanted : PCB CAD Drawing Program  
Message-ID: <19970624.134139.10726.0.randy\_ott@juno.com>

Check out Windraft and Winboard schematic entry and PCB layout programs.  
You can get a free version of both at [www.ivex.com](http://www.ivex.com).

-----  
Charles R. (Randy) Ott  
K5HJ - QRP-L #1040  
-----

On Mon, 23 Jun 1997 22:10:14 -0700 John Horton <jhorton@primenet.com>  
writes:  
>I am interested in a drawing program for PCB's on the PC. I would  
>like  
>something like TANGO SCHEMATIC but can't afford the price. I am  
>looking  
>for something in the hundred dollar price range or less. I would like  
>it geared toward PCB's. I have tried several inexpensive programs  
>without much success. Any help would be appreciated.  
>  
>de KE7CW, John  
>  
>

-----  
Date: Tue, 24 Jun 1997 11:58:08 -0700 (PDT)  
From: Jim W7LS <w7ls@brigadoon.com>  
To: NOTU@webaccess.net  
Cc: qrp-1@Lehigh.EDU  
Subject: [21877] Re: Aluminum Fence Wire Antennas?  
Message-ID: <199706241858.LAA29280@siskiyou.brigadoon.com>  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"

Hi, Steve. Well, I think it should work just fine. I think I'd use the heavier gauge aluminum fence wire, though, if you are going to have long runs.

You might also want to check the rf resistance of that steel/galvanized wire. I'd be suspicious that it has a bunch of resistance. Steel wire will have several ohms per hundred feet in small gauges, I think. Also, since we are dealing with skin conduction, and you have galvanization on it, the rf resistance might be way higher than the steel. Dunno. Gotta grab some physics books and look into it.

Let us know! We're curious... 73 de Jim, W7LS

At 06:17 AM 6/24/97 -0600, you wrote:

>Hi Jim...I like ur idea...I'm already using the steel/galv. fence wire.  
>It's a little stronger/heavier and you can soldier to it if you scrape  
>the galvanizing crud off the steel! I've got some long spans in my  
>horizontal loop (300') and the steel hangs in their(sags)! But the  
>aluminum might be lighter/strong enough to do the something with less  
>sag?? Anyway of knowing how this would work before just doing it? Steve  
>

>Jim W7LS wrote:

>>

>> A couple of notes, here: One is that I found a cheap source of antenna wire  
>> ( I think). It is electric fence wire. Aluminum, 17 gauge. Costs \$15 for 400  
>> meters (!!?!). That's around a penny a foot, gang.... And it's relatively  
>> strong, too. Being aluminum, the conductivity should be ok, except maybe  
>> that since rf travels along the skin of the conductor, and aluminum is oxide  
>> out there, it may not be so hot. Heck, beam antennas are made of aluminum.  
>> Should work.

>> Second thing: The terminations (600 ohm or so) at the distant ends  
>> of this array could maybe be a poor ground rod. You are trying to dissipate  
>> energy instead of having it reflect back, anyway. Why not soak it up in the  
>> ground rod (a deliberately poor one)?

>> What think, gang?

>>

>> 73 de Jim, W7LS

>

>

>-----  
>CW, Thy original mode. QRP, an intelligent use of Bandwidth & Energy!  
>N0TU/hw8/49er/NW8020/SW40/38s/solar/backpack-mobile... QRP-L # 911  
>My homepage - <http://www.webaccess.net/~S&P> ARS# 206 CQC# 394  
>  
>  
>

-----  
Date: Tue, 24 Jun 1997 15:58:09 EDT  
From: tahrens1@juno.com (Tim H. Ahrens)  
To: qrp-l@Lehigh.EDU  
Subject: [21878] LEOs (long)  
Message-ID: <19970623.145930.16551.0.tahrens1@juno.com>

Sorry for the BW, but thought this might be of some  
useful (although disappointing) news.

cu

Tim W5FN

\*\*\*\*\*

Date: June 18, 1997  
To: The Executive/Professional Briefing List  
From: Durrell Hillis  
Senior Vice President and General Manager  
Space and Systems Technology Group  
  
Bary Bertiger  
Corporate Vice President and General Manager  
Satellite Communications Group  
  
Subject: Motorola Seeks FCC Approval for Celestri System

Motorola filed a request June 13 with the Federal Communications  
Commission for Motorola Global Communications, Inc., a wholly owned  
subsidiary of Motorola, to construct, launch and operate the  
Celestri(tm) System.

The Celestri System is a proposed communications network formed from an integrated family of advanced communications satellites, ground stations and terrestrial equipment that is planned to provide a broad range of multimedia, video and data services to communications carriers, multinational corporations, small- and medium-sized business, telecommuters and other consumer customers throughout the world. The system is targeted for service operations in 2002 at prices significantly below those offered by terrestrial systems, wireline or wireless.

While the design of the Celestri System is different from the IRIDIUM(r) System in terms of application, spectrum and market, it leverages Motorola's IRIDIUM project experience and the experience amassed in 30 years of space-based communications. The Celestri LEO System is planned to be implemented through major design reuse of key space and ground-based components of Motorola's Millennium geosynchronous earth orbit (GEO) and M-Star low-earth orbit (LEO) systems.

The name Celestri draws on the word Celestial for imagery appropriate for a space-based communications network, and combines it with tri, which refers to the system's ability to deliver three distinct classes of service: interactive multimedia; broadcast; and interactive broadcast or hybrid.

Once completed and operational, the Celestri System will combine GEO high-earth orbit satellites and LEO satellites with earth-based control equipment and interfaces. The GEO satellites, commonly known for providing broadcast services such as television, are fixed in high altitude, 22,300 miles above the earth. A constellation of 63 LEO satellites, orbiting at 900 miles above the earth, would provide telecommunications carriers, businesses and consumer customers instant access to a broadband network infrastructure and true bandwidth on demand. Additional LEO satellite capabilities would be integrated with the Celestri System to provide interactive communications at very high band width.

Motorola's Space and Systems Technology Group and its Satellite Communications Group plan to design and manufacture the LEO and GEO satellites, the ground systems for carriers and multinational corporations and the family of customer premises equipment.

Celestri will operate on a non-common carrier basis. This means that Motorola will develop Celestri-based services and plans to sell wholesale capacity on the system to telephone companies and other service providers who will market service directly to end-users by communications carriers and other parties.

Celestri is a trademark of Motorola, Inc.

IRIDIUM is a registered trademark and service mark of Iridium LLC

-----  
Date: Tue, 24 Jun 1997 15:37:35 CDT  
From: "Rick Hadley" <r.hadley@www.mebbs.com>  
To: qrp-l@Lehigh.EDU  
Subject: [21879] Re: Leo news  
Message-ID: <1.5.4.16.19970624150154.1c5f72be@www.mebbs.com>  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"

I got a bit quick with the delete key, so don't have a quote from the previous message, but there's no need to get panic-stricken over the proposed Celestri system. Here's a quote from this week's edition of "Wireless Week".

"Motorola's newest satellite communications proposal, Celestri, introduces competition in the spectrum hunt for broadband data and video applications.

The proposed \$12.9 billion, 63-satellite system would operate on Ka-BAND FREQUENCIES, WHERE TELEDISC CORP'S LOW-EARTH ORBIT SYSTEM IS ALREADY LICENSED. (emphasis mine) Similar to Teledesic, Celestri would provide high-speed data and video services across the globe.

Celestri satellites, which will be divided between low-earth and geostationary orbit will be heavier than many of the LEO satellites designed for other systems...."

>From that reading, it doesn't appear that there is any new threat to amateur frequencies. I have a hunch that our best chance to save amateur frequency allocations will come from embracing change and new technologies, not from assuming a Luddite, circle-the-wagons, attitude whenever a new wireless technology appears.

73, Rick

-----  
Richard W. (Rick) Hadley  
W0FG - Life Member ARRL  
QRP-L #1019  
r.hadley@www.mebbs.com  
The Solutions Store, Ltd.  
-----

-----  
Date: Tue, 24 Jun 1997 14:51:39 -0600  
From: "Bob Follett" <bfollett@ditell.com>  
To: "QRP-L Group" <qrp-l@Lehigh.EDU>  
Subject: [21880] New Solar Cycle Report/Status --Long, but exciting  
Message-ID: <199706242047.0AA05894@mars.ditell.com>  
MIME-Version: 1.0  
Content-Type: text/plain; charset=ISO-8859-1  
Content-Transfer-Encoding: 7bit

Gang:

>From Chuck's favorite site, here is the New status on Cycle 23. Please note a predicted TRIPLING in sunspots by July, next year!

<http://solar.uleth.ca/solar>

#### STATUS OF THE CURRENT SOLAR CYCLE:

Everyone now agrees that we have finally observed the birth of solar cycle 23. We have probably been immersed within this new cycle for some time. According to sunspots, the minimum occurred in May 1996 with an as yet unofficial smoothed sunspot number of 8.1. Since then, we have observed a steady increase in the number of new-cycle sunspots having the proper new-cycle magnetic polarities. At the time of this writing, most of the new sunspots which are appearing are new-cycle spots.

According to the number of days in which no sunspots appeared, the cycle minimum (or maximum number of spotless days) occurred in October 1996 when there were 26 spotless days. This month also corresponds with the lowest monthly observed sunspot number of 2.3 (reported by SEC) and 1.8 (according to the International Relative Sunspot Number [RI]).

In addition, butterfly plots showing the emergence of new solar sunspot regions according to solar latitude indicates a clear separation in formation latitudes from old cycle 22 and new cycle 23. There are also many other parameters which have shown that new cycle 23 is now firmly in-progress.

This conclusion is a mixed-blessing for industry.

Radio communicators can now begin to look forward to an increasingly productive reign of ionospheric radio communications. In fact, higher-band high-frequency (HF) radio communications are already beginning to be

observed. By July of 1998 (within the next 12 months), the observed sunspot number should almost triple in magnitude from a current predicted smoothed value of 40 for June 1997 (predicted through regression methods) to 109 (plus or minus 25) by July 1998. This will substantially increase the strength of the ionosphere. The next year will therefore be an exciting one for radio communicators.

The predicted smoothed sunspot number over the next 9 years is predicted to follow this pattern:

|      | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1997 | 019 | 022 | 027 | 030 | 034 | 040 | 044 | 050 | 054 | 060 | 066 | 071 |
| 1998 | 077 | 082 | 088 | 093 | 099 | 103 | 109 | 113 | 119 | 123 | 128 | 131 |
| 1999 | 136 | 139 | 142 | 146 | 148 | 151 | 153 | 154 | 156 | 157 | 158 | 159 |
| 2000 | 160 | 160 | 160 | 160 | 159 | 158 | 157 | 156 | 155 | 154 | 152 | 150 |
| 2001 | 148 | 146 | 142 | 140 | 137 | 134 | 131 | 128 | 124 | 121 | 118 | 114 |
| 2002 | 111 | 107 | 103 | 100 | 097 | 093 | 089 | 086 | 082 | 079 | 076 | 072 |
| 2003 | 069 | 066 | 062 | 060 | 057 | 053 | 051 | 048 | 046 | 043 | 041 | 039 |
| 2004 | 036 | 034 | 032 | 030 | 028 | 027 | 024 | 023 | 021 | 020 | 019 | 017 |
| 2005 | 016 | 014 | 013 | 012 | 012 | 011 | 010 | 009 | 009 | 008 | *** | *** |

The predicted smoothed 10.7 cm solar radio flux values over the next 9 years is predicted to follow this pattern:

|      | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1997 | 077 | 080 | 084 | 087 | 091 | 096 | 100 | 105 | 109 | 114 | 119 | 124 |
| 1998 | 129 | 134 | 139 | 144 | 149 | 153 | 158 | 162 | 167 | 171 | 175 | 178 |
| 1999 | 182 | 185 | 188 | 191 | 193 | 196 | 198 | 199 | 201 | 202 | 203 | 204 |
| 2000 | 205 | 205 | 205 | 205 | 204 | 203 | 202 | 201 | 200 | 199 | 197 | 195 |
| 2001 | 193 | 191 | 188 | 186 | 183 | 181 | 178 | 175 | 172 | 169 | 166 | 163 |
| 2002 | 160 | 156 | 153 | 150 | 147 | 144 | 140 | 137 | 134 | 131 | 128 | 125 |
| 2003 | 122 | 119 | 116 | 114 | 111 | 108 | 106 | 103 | 101 | 099 | 097 | 095 |
| 2004 | 092 | 091 | 089 | 087 | 085 | 084 | 082 | 081 | 079 | 078 | 077 | 075 |
| 2005 | 074 | 073 | 072 | 071 | 071 | 070 | 069 | 068 | 068 | 067 | *** | *** |

Satellite operators and users of satellite technology are less impressed with the onset of this new cycle of activity. The increased number of sunspots implies an attendant increase in the number of solar flares capable of spewing out particles that can charge and damage sensitive electronic components. The number of associated Earth-directed coronal mass ejections will also increase. This all means that users and owners of satellite technology will have to be increasingly aware of potential Earth-bound interplanetary disturbances. The death of the Telstar 401 satellite has been unofficially attributed to the arrival of such a disturbance, combined with the effects of higher-than-normal densities of energetically charged electrons. That particular interplanetary disturbance was about the size of a mouse when you think of what is yet to come over the next 4 to 6 years. The largest interplanetary disturbances which we will observe during solar



cycle 23 may be closer in size to an elephant than the small mouse we observed that may have contributed to the sudden death of Telstar 401. The overwhelming message which should be sent to users of satellite technology during this new solar cycle is "be cautious."

Electrical hydro operators have enjoyed several years of quiet conditions. Nothing similar in magnitude to the events of March 1989 have been observed, where almost the entire electrical grid of electricity supplied to the province of Quebec collapsed within less than 2 minutes due to powerful electrical currents that were induced into Hydro Quebec's electrical power lines during one of the strongest geomagnetic storms on record. Since most of the electrical power lines and companies interconnect their lines, this outage had impacts all across North America. The additional load drawn from other power companies to compensate for the loss observed during the Quebec blackout brought many other power companies close to similar failure conditions. If the situation was slightly worse, other blackouts across North America could have been observed - possibly making this a much larger continent-wide type of power blackout instead of a relatively localized province-wide Quebec blackout.

Oak Ridge National Laboratory studied the effects that a geomagnetic storm might have on the U.S. economy if the storm was only slightly larger than the one observed in March 1989. Their estimate of the impact of such a disturbance to the Gross Domestic Product alone put total economic costs in the U.S. in the \$3 to \$6 BILLION dollar range! This assessment, along with reviews conducted by the North American Electric Reliability Council placed the 1989 and 1991 geomagnetic storm events in a category equivalent to hurricane Hugo and the San Francisco earthquake in its relative impact to the reliability of the electric power grids in North America. That's a sobering thought for hydro operators and everyone reliant upon electricity!

The ability to predict conditions conducive to such large storm events will receive a considerable boost later this year when NASA's ACE satellite (Advanced Composition Explorer) is due to be launched. This satellite will provide near-continuous sampling of the space environment upstream of the Earth. It will provide as much as about 60 minutes of lead-time to the arrival of disturbances at the Earth. This should be sufficient time to allow hydro operators to prepare and watch for the damaging conditions that can follow interplanetary disturbances.

Predictions of geomagnetic activity show that the number of minor, major and severe geomagnetic storms will steadily increase. The year with the maximum number of minor storm days is expected in the year 2005 during the decline of solar cycle 23 when the occurrence frequency of geoeffective coronal holes will reach a maximum. Over 40 minor storm days are expected in the year 2005. During the solar maximum year of 2000, coronal mass ejection induced minor storms should number at about 30 during the year. This is more than double the number of minor storm days expected during 1997. Major

geomagnetic storming is expected to peak in the years between 1999 and 2002. Severe geomagnetic storming, which is very difficult to predict, should peak in frequency between the years 1999 and 2005 with the preferred year of peak severe storm frequency being 2002.

People interested in observing aurora's will be happy to know that we are well on our way to seeing larger events. Over the next 3 to 6 years, we will see many very significant auroral displays that should cover much of the U.S. and all of Canada. Activity observed during the last 3 years has been very miniscule compared to the events we can expect to observe during this new cycle. The largest of these events should be sufficiently intense to produce visible auroral activity from as far south as Florida! Although this is horrendous news for satellite users, radio communicators, navigators, surveyors and others, it is exciting news for those who love to watch for these awesomely powerful atmospheric displays of activity.

The frequency and magnitude of solar flares is also expected to increase considerably over the next 3 to 6 years. Over the last few years, most of the solar flares we have observed have been very small and insignificant. As we approach the new millenium, the influence and power output of solar flares could increase by several orders of magnitude. The largest solar flares of this new solar cycle will almost certainly be at least 10,000 times more powerful than the majority of smaller flares we have observed over the last couple of years. These rogue flares could begin to be observed as early as 1998 with a peak expected in the years between 1999 and 2003.

Broken down, the number of M-class flares observed during an entire year should follow a pattern similar to this:

| 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|------|------|------|------|------|------|------|------|
| 15   | 40   | 220  | 530  | 370  | 540  | 300  | 200  |

The number of X-class flares observed during an entire year should behave similar to this:

| 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|------|------|------|------|------|------|------|------|
| 1    | 5    | 15   | 40   | 30   | 50   | 30   | 10   |

Major proton flare events capable of increasing proton densities in the near-Earth space environment are expected to reach a maximum between the years 1999 and 2003 with a double-maximum predicted for the years 2000 and 2002. The number of predicted solar proton events is expected to increase slightly in 1998 and then more than triple between 1998 and 1999. There could be a fairly copious number of solar proton events during cycle 23. Estimates range from about 8 to as high as about 16 per year during the years of maximum proton flaring.

These are just a few of the events we can expect to observe during this

new solar cycle.

The new millenium should be ushered in a BANG! Periods of solar activity will be observed that will be capable of literally shaking space!

(To help accomodate the increased demand for information during solar cycle 23, we have redesigned our web pages to serve more as a central hub for information. Everything from current solar and geophysical indices to current auroral activity sighting reports, daily reports, alerts and warnings, and much more can now be found at: <http://solar.uleth.ca/solar>)

\*\* End of Cycle Satus Report \*\*

73, Bob

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Bob Follett AB7ST, QRP-L # 129, NorCal, ARCI, 10-10, ARS  
2861 Estates Dr. VOICE: 801.649.6457  
Park City, UT 84060 E-mail: bfollett@ditell.com

-----  
Date: Tue, 24 Jun 1997 20:55:00 +0000  
From: Bob Roach <KE4QOK@worldnet.att.net>  
To: tenten-1@Lehigh.EDU, qrp-1@Lehigh.EDU  
Subject: [21881] Low Power SSB on 10M  
Message-ID: <19970624205454.AAB15606@LOCALNAME>  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"

Hello Everyone,

I am looking for plans for a low power homebrewed 10M SSB transiever for portable use. Does anyone have any leads on anything of this nature. I'm not opposed to store bought gear but money is a big factor at the moment.

73

Thanks

(o o)

-----o00\_( )\_00o-----

73 es TNX

KE4QOK

Real radios glow in the dark.

Bob

Power is no substitute for skill.

If it stayed up last winter, it was too small.

136 Hermitage Rd.

Newport News, Va. 23606 KE4Q0K@worldnet.att.net  
(757)930-0348      Advanced, W5YI VE, ARRL, PARC

-----  
Date: Tue, 24 Jun 97 20:58:58 UT  
From: "Ed Manuel" <n5em-qrp@msn.com>  
To: wb0poq@visi.com  
Cc: qrp-1@Lehigh.EDU  
Subject: [21882] RE: Standoffs  
Message-ID: <UPMAIL15.199706242058220950@msn.com>

Bob,

Try cutting small squares (1/2" x 1/2" would be easy) of pc board with tin shears (Wiss "half-moon" style). You may have to true them up with your needle nose pliers if they curl too much. Then, using something quick like a hot melt glue gun, put them little pads wherever you need them. You could also use superglue if you have the pads nice and flat, but the hot melt glue accomodates some slop. You can also cut out a strip, say 1/4" x 4" to use as a power buss on the side of your work area. Let the creative juices flow.

Ed, N5EM

-----  
Date: Tue, 24 Jun 1997 17:33:05 -0400  
From: Zack Lau <zlau@arrl.org>  
To: qrp-1@Lehigh.EDU  
Subject: [21883] Re: Standoffs for Brassboard construction  
Message-ID: <33B03D11.53FF@arrl.org>  
Mime-Version: 1.0  
Content-Type: text/plain; charset=us-ascii  
Content-Transfer-Encoding: 7bit

I've swaged terminals onto pieces of etched circuit board. The copper foil was then soldered to a ground plane for mounting, since I rarely use glue to hold stuff down. Of course, the terminals were insulated from the foil via the fiberglass circuit board.--Zack W1VT

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Date: Tue, 24 Jun 1997 14:37:03 -0700  
From: Vic Rosenthal <rakefet@rakefet.com>  
To: bfollett@ditell.com  
Cc: Low Power Amateur Radio Discussion <qrp-1@Lehigh.EDU>  
Subject: [21884] Re: New Solar Cycle Report/Status --Long, but exciting  
Message-ID: <33B03DFF.177A@rakefet.com>  
MIME-Version: 1.0  
Content-Type: text/plain; charset=us-ascii  
Content-Transfer-Encoding: 7bit

Bob Follett wrote:

>  
> Gang:  
>  
> >From Chuck's favorite site, here is the New status on Cycle 23. Please note a  
> predicted TRIPLING in sunspots by July, next year!

<big snip>

But how do they explain the fact that so far, the prediction has not been borne out by observations? The solar flux has been sitting in the doldrums since the winter, with a couple of peaks into the 80's, but mostly in the 70's. This month, for example, it hasn't gone much above 70! So where's the 96 that was predicted for June?

Vic K2VCO

-----  
Date: Tue, 24 Jun 1997 17:46:06 -0400  
From: Zack Lau <zlau@arrl.org>  
To: qrp-1@Lehigh.EDU  
Subject: [21885] Front Panel Screws  
Message-ID: <33B0401E.23E2@arrl.org>  
Mime-Version: 1.0  
Content-Type: text/plain; charset=us-ascii  
Content-Transfer-Encoding: 7bit

Well, now that I've figured out how to make nice front panels with my milling machine it makes sense to figure out how to avoid those nasty scratches...

Are cap head screws the best choice for attaching panels without worry of the screwdriver slipping?

I know a lot of equipment uses Phillips head screws.

Flat head screws are a poor choice--scratches happen  
real easy.--Zack W1VT

-----  
Date: Tue, 24 Jun 1997 17:13:55 -0500  
From: "Steve Cohen" <scohen@xybion.com>  
To: qrp-l@Lehigh.EDU  
Subject: [21886] Re: East German Tank Keys  
Message-ID: <199706242206.SAA33914@nss2.CC.Lehigh.EDU>  
MIME-Version: 1.0  
Content-type: text/plain; charset=US-ASCII  
Content-transfer-encoding: 7BIT

On Monday, 23 Jun 1997 ccart@dns.vidtel.com wrote:

> On Sat, 21 Jun 1997 NilsBull@aol.com wrote:  
> > battery & something that looks like antenna. Oh, and the Eastern Bloc tank  
> > key that I bought from Dick Pascoe at Dayton97.  
>  
> Hey! I thought I bought the only one he had! Sounds like selling the  
> litter of 5 puppies, you can sell the "ugly" one at least four times :)  
>  
> When I got mine I noticed that the plug was wrapped in wax paper, when I  
> asked what kind of plug it had, Dick replied, "an East German one". He  
> was right.

Wow, do \*I\* feel slow. When I first read "East German Tank  
Keys" I was picturing the thing that an East German tanker puts into  
the ignition...

Steve

P.S. QRP Content: Finished my WM-20 a few weeks ago and immediately  
went out of town for two weeks with no time to operate. Still  
looking for that first real QRP sideband QSO...

-----  
Stephen D. Cohen  
N30IE  
6 Elm Place  
Berkeley Heights, NJ 07922

-----  
Date: Tue, 24 Jun 1997 16:12:21 -0600

Another question - why haven't calls like KQ5RP been assigned ?? Those look like good candidates for us ?? Also, does anyone know the rules for club call assignments ??

john

Norcal #262 QRP-L #219 QRP-ARCI #8303 NE-QRP #213 CQC #045  
CQrp #15 NJ-QRP #50 AK-QRP #52 NW-QRP #454 FISTS #3184  
Personal Web Page: <http://www.geocities.com/capecanaveral/9773/>

So I love email, just understand that if I get a lot of messages I just cannot answer each one. but encouragement from my friends

is what keeps me going.

still have not been on the air. to many trips to the hospital, doctors, home nurse and Hospice visits etc... but starting Thursday I will have time during the day to get on 30M or 20M or even 40M... BUT I only have indoor antennas but I do make some contacts.

Thanks for all the support and encouragement.  
Sincerely, 72/73 Dennis Zeares K3ETS Dallas

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Date: Tue, 24 Jun 97 15:15:00 PDT  
From: Cecil A Moore <Cecil\_A\_Moore@ccm.ch.intel.com>  
To: qrp-1@Lehigh.EDU  
Subject: [21889] G5RV 40M Beam

If we run our G5RV length antenna North/South, we get East/West coverage on 40 meters. One can also achieve North and South beaming on 40m with a G5RV by adding a 27ft vertical wire to one of the ends. Since I have pulleys on each end of my 102 ft dipole, it takes me about 2 minutes to install the additional wire. See what happens when I do at:

<http://people.delphi.com/CecilMoore/40mbeamv.htm>

73, Cecil, W6RCA, 00TC

-----  
Date: Tue, 24 Jun 1997 16:30:59 -0600  
From: John Evans - N3Q00 <jaevans@codenet.net>  
To: qrp-1@Lehigh.EDU  
Subject: [21890] Re: Reserved QRP suffixes  
Message-ID: <33B04AA3.7358@codenet.net>  
Mime-Version: 1.0  
Content-Type: text/plain; charset=us-ascii  
Content-Transfer-Encoding: 7bit

> Another question - why haven't calls like KQ5RP been assigned ??

A little research shows that a few calls have been assigned -

WQ4RP - Knightlites  
WQ8RP - MI QRP Club





Message-ID: <2.2.16.19970624224847.304ff582@popd.ix.netcom.com>  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"

For Sale:

Military Leg Key, FSN 5805-00-455-6052, made for U.S. govt by Electro Voice in 1977. In original MIL packaging, I opened it to look at it, and wrapped it back up. Has a nylon harness that fastens around your leg with Velcro, and is integral to the base of the hand key (it screws together to lock in the harness). Key has thumb-screw adjustable tension and contact spacing, and coil-cord cable.

Selling it because I can't send worth beans with a hand key!!  
\$45 shipped.

Please reply by e-mail to me if interested

73 -- Glenn

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"Remember, any tool can be the right tool!" Red Green

AE0Q / V31RY ex: GM5BKC, ZB2WZ, SV0WY, WA0VPK  
v31ry@ix.netcom.com --SOWP 5558-M, QCWA LM, ARRL LM, NCVA--  
<http://www.qsl.net/ae0q>

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End of QRP-L Digest 767

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